AUTOMOTIVE INDUSTRIES

VOLUME 56 *Philadelphia, Saturday, February 12, 1927* NUMBER 6

What *the* Industry is *Thinking About*

Automotive Facts and Gossip Picked Up at the National Shows

By Norman G. Shidle

HOW interesting the cross-section of automotive thought, trends and activities which unfolds as one roams the hotel rooms and lobbies, attends formal and informal meetings, and talks with car and truck makers, parts and accessory manufacturers, dealers, distributors and automotive men of every character during those two hectic weeks of each January while the New York and Chicago shows are in progress! And yet, "cross-section" probably is far too definite a simile to apply to the somewhat confused, though stimulating, mosaic which the two weeks' rain of ideas paints on one's mind.

Old friends with new ideas; new friends with old ideas; dinners; luncheons; sales meetings; long, comfortable talks sometimes about questions vital to the industry and sometimes about nothing at all; short, uncomfortable interviews about the same things; people, plans and platitudes all make up a part of the kaleidoscopic panoramas known to the automobile business as National Show Weeks. And as an editor we don't know of any pleasanter task during the year than that of coming back to the old desk, laying in a large supply of matches, lighting the editorial pipe and reaching for the typewriter preparatory to the annual attempt to figure out from this jumbled array of more or less conflicting ideas those things which have some real meaning to the industry and those whose value is as ephemeral as a flapper's modesty.

Finding factory men in New York on the opening day of the show was somewhat difficult, as usual, but in Chicago it was almost impossible. E. S. Jordan was there, our conferees tell us, as were R. H. Grant, C. F. Kettering, E. L. Cord and a few others, but personally we didn't have much luck on Saturday in Chicago. About the only person of any interest whom we saw was a minor executive of one important car company who explained at some length his personal reasons for believing that there was no chance whatever of his organization being involved in any mergers. That same company is one of the four which figure as principals in the $1,000,000,000 merger plans reported just a week later as being quietly pushed by a prominent Wall Street banking group.

With that as a start, we continued to query various people during the week about merger possibilities and can now report authoritatively that rumor reports the possibility of practically every independent company in the industry merging with practically any other independent company or group of independents.

A thorough knowledge of that branch of algebra labeled in our school books "Permutations and Combinations" would be necessary to figure accurately the number of possible mergers rumored.

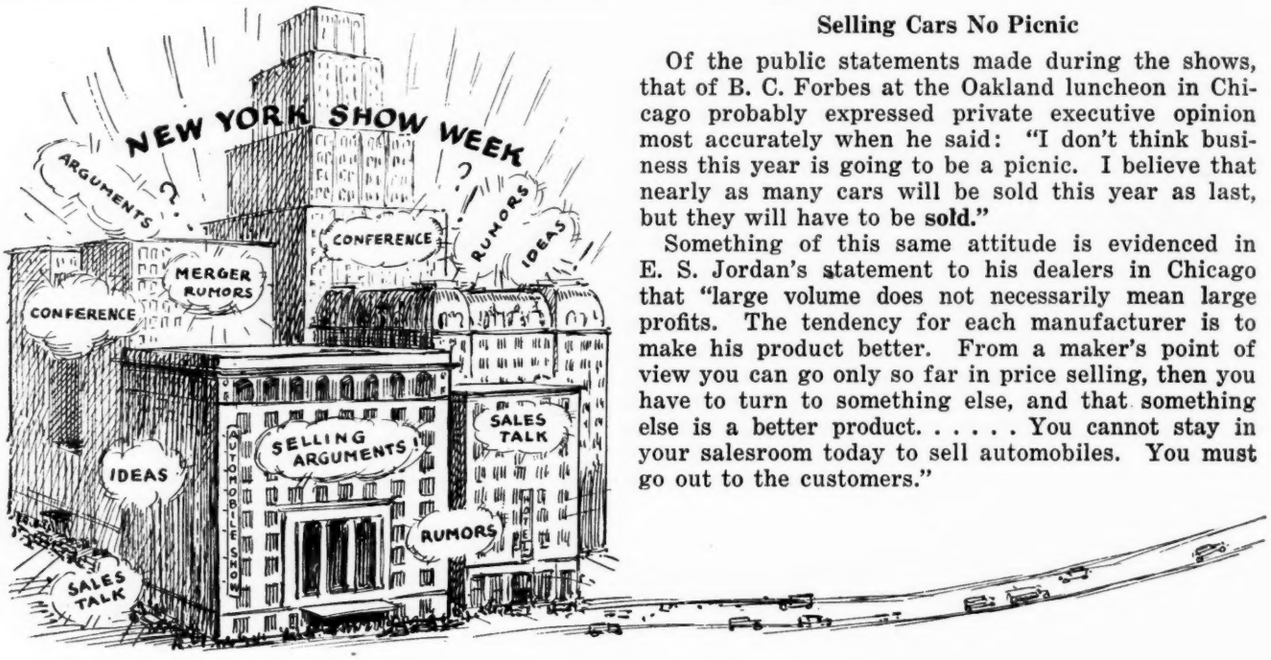
Personalities Must be Considered

We're still convinced, however, that personalities and the personal desires of a few individuals may be just as important in determining the success or failure of some merger negotiations as will purely profit-making possibilities. Particularly is this likely to be true as regards proposed mergers of companies which already are on a sound profit-making basis.

About the actual possibilities of 1927 automotive business, we gathered quite a number of ideas which ring true, although men to whom we talked were not all of exactly the same mind. The president of one big company said that he is looking for a good year in 1927, but can't see new records in sight for the industry just now. Rains and floods, as well as the poor cotton situation, he said, have affected business quite adversely in some southern states during the last month or so, but conditions on both scores

are rapidly improving and distributors from several southern points were placing orders for more spring deliveries than last year.

THOSE two hectic weeks of each January while the New York and Chicago shows are in progress!



He is of the opinion that the bad effects of the cotton reverses already have spent themselves to a large degree. The industry, he thinks, already has written off its losses on that score. While he admits that business in the cotton areas isn't likely to start booming just now, he does feel strongly that it won't be any worse than it was in 1926 and that it may be better before the end of the year.

An important executive of another even larger producer, however, thinks that the effects of the cotton situation will to some extent hang over into 1927 and that it will be some time before buying reaches normal briskness in the cotton areas. He, too, believes, nevertheless, that 1927 will be a reasonably good year, but thinks retail sales will run behind 1926. This man, who is probably as close and scientific an analyst of business trends as any man in the industry, thinks it possible that February and March will see something in the nature of overproduction by the factories, although he is hopeful this won't happen. If it does, he looks for a sharp curtailment in output along about the end of March.

That Makes it Unanimous!

We heard the sales promotion manager of one big factory tell a dealer sales conference that "All economists and business analysts this year agree on one thing—that 1927 is going to be a boom year." He may be right about the results, we can't be sure, but none of the business services we take has said any such thing and few executives among the many to whom we talked are thinking that way.

There is no pessimism in the industry today. The conditions of the industry's mind probably can best be described as "conservatively optimistic." There is a growing feeling that the automobile business is getting more stable and sounder and that it is becoming a better business to be in every year. Talk of new records which dominated our conversations with executives a few years ago, is giving place to talk of more efficient merchandising, better profit per unit, stability of production schedules and sound, continuous progress.

Selling Cars No Picnic

Of the public statements made during the shows, that of B. C. Forbes at the Oakland luncheon in Chicago probably expressed private executive opinion most accurately when he said: "I don't think business this year is going to be a picnic. I believe that nearly as many cars will be sold this year as last, but they will have to be **sold.**"

Something of this same attitude is evidenced in E. S. Jordan's statement to his dealers in Chicago that "large volume does not necessarily mean large profits. The tendency for each manufacturer is to make his product better. From a maker's point of view you can go only so far in price selling, then you have to turn to something else, and that something else is a better product. . . . . You cannot stay in your salesroom today to sell automobiles. You must go out to the customers."

This matter of retail salesmen in particular and efficient handling of business routine by dealers in general is getting more important every minute. That's one thing that does stand out clearly from show week observations and conversations. And it's going to get more attention this year from the manufacturers than ever before or we miss our guess.

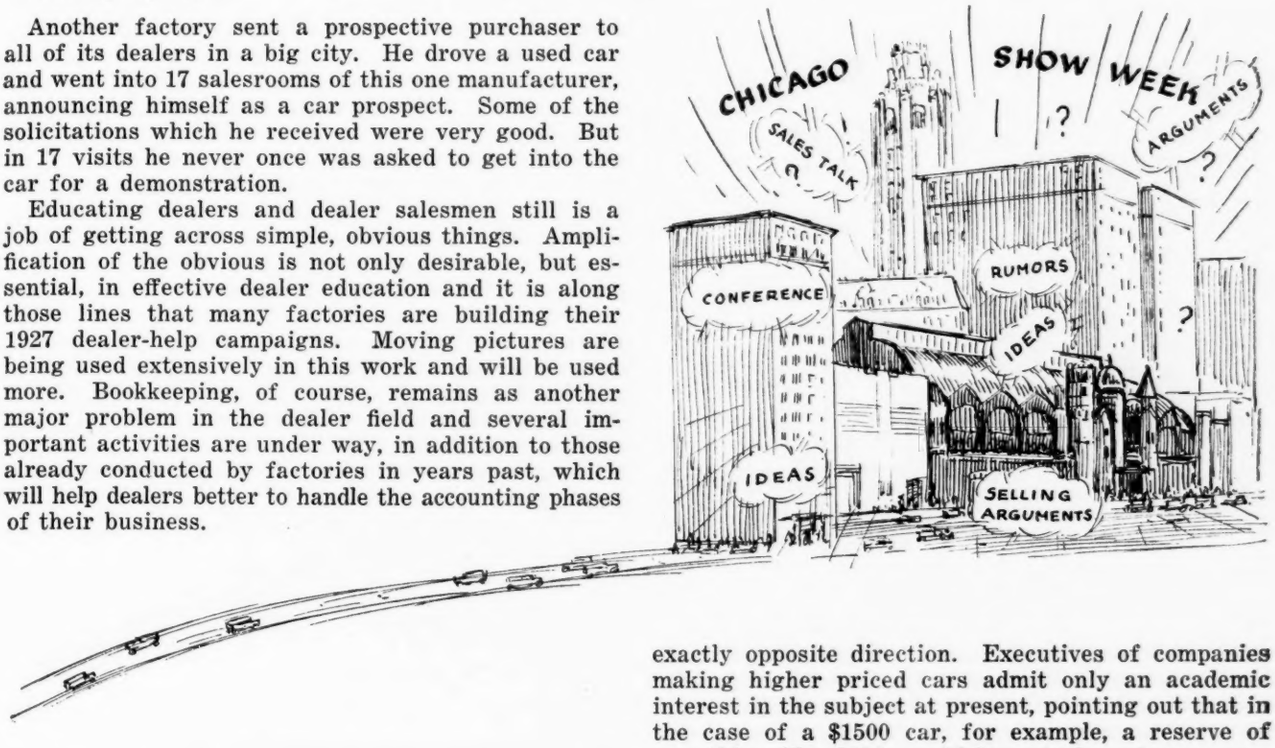
My, how some of the factories did sail into the dealers at Chicago. . . . . and at the risk of being accused of having a biased viewpoint we are going to state the opinion that the factories were right in practically everything they were saying. Pointing out some of the things done by factories which harm rather than hurt the merchandising situation doesn't alter the truth of the fact that dealers today should be out trying to get business more vigorously than many of them are.

We have recited in the past so many instances showing lack of active selling effort by various dealers that we probably have begun to bore our friends as well as all those who are bored before we start. Two interesting surveys came to our attention in Chicago, however, which are worth adding to the list.

One factory made a survey of 2000 owners who had bought a car of the make most directly competitive with its line, asking why these owners had bought the make which they did. Several interesting facts were developed which we're going to pass over for this week, but here's one that is outstanding: Eighty per cent of the owners of this rival car never had been approached by a salesman for the car whose manufacturer made this survey. Eighty per cent of the owners of this rival car, in other words, never had even been asked to buy the other.

Another factory sent a prospective purchaser to all of its dealers in a big city. He drove a used car and went into 17 salesrooms of this one manufacturer, announcing himself as a car prospect. Some of the solicitations which he received were very good. But in 17 visits he never once was asked to get into the car for a demonstration.

Educating dealers and dealer salesmen still is a job of getting across simple, obvious things. Amplification of the obvious is not only desirable, but essential, in effective dealer education and it is along those lines that many factories are building their 1927 dealer-help campaigns. Moving pictures are being used extensively in this work and will be used more. Bookkeeping, of course, remains as another major problem in the dealer field and several important activities are under way, in addition to those already conducted by factories in years past, which will help dealers better to handle the accounting phases of their business.



Further investigations during show weeks of the retail financing situation didn't develop anything to change our opinion that this phase of selling is on a reasonably sound basis now and that the future will see much sounder operations than the past. True, the ill-effects of past indiscretions have not yet been entirely discounted. Black sheep are still returning to the fold. But the number of the undesired guests grows less as time goes on. As pointed out several weeks ago, the misfortunes which have accrued to several important finance companies in themselves will operate as a restraining influence in scrutinizing future credits.

The practice of manufacturers as regards factory financing plans continues to differ from company to company. Some organizations still are exerting considerable pressure, directly or indirectly, to have their dealers use the financing arrangements set up by the factory. Many others, however, are making little or no effort along these lines.

Even on the Pacific coast, it would appear, retail financing conditions are on the mend. One big distributor who was among the leaders in the sale of cars on extremely liberal terms, quite recently is said to have admitted that he was on the wrong track and to be looking forward to a slightly smaller volume with greater profit during the coming year.

One company president voiced the belief that financing rates should be made different for each make of car, the rate to be based on past repossession experiences with that car, as insurance rates are based on experience figures. This would give the manufacturer, he points out, a sound, selfish reason for keeping repossessions to a minimum.

Car manufacturers we found thinking casually about a number of things, some of which probably don't mean much at present in most cases. Take the matter of artificial scrapping of cars. Chevrolet, of course, is known to be experimenting along this line. Ford on the other hand, with his recently announced flat rate factory reconditioning plan, is working in an exactly opposite direction. Executives of companies making higher priced cars admit only an academic interest in the subject at present, pointing out that in the case of a $1500 car, for example, a reserve of something like $150 would have to be set up as opposed to a $5 reserve on a low-priced car. It cannot be denied that the idea of artificial scrapping is one which has at least attractive speculative possibilities for the minds of some executives, but the economic difficulties in the way of any widespread application of the idea still seem to be overwhelming.

Then there's the question of retail delivery prices. Not much has been heard about that for some while back. Factories still are eager for their dealers to deliver a car to the customer at the lowest possible price, but in most cases have no strenuous objections to the latter's making a legitimate profit on a legitimate accessory sale made in connection with the car sale. They do object to attempts to add an extra concealed charge of some kind by making the prospect think he is buying equipment which already is standard and included in the selling price of the car. Efforts still are being made to control the retail selling price in so far as possible, but only slow progress is being made in a good many cases.

Original Parts Distribution

Sale of original parts to independent garages and repair shops now has become almost standard practice in the industry, although methods of handling this matter differ somewhat in individual cases. No longer, however, does the car manufacturer even pretend to believe that all of the service on his cars can be or will be done only in the establishments of his own dealers.

One question that seems likely to be thrashed out more thoroughly in the next year is that of discounts and prices of parts sold by independent parts makers to factories for resale to distributors and dealers. Where the parts maker also is selling through jobbers for replacement, he often finds it difficult to get the car maker to sell to distributors for a price which will enable jobbers to compete for the distributor and branch business. The parts maker, on the other hand, has a definite interest in protecting the jobber as well as the car manufacturer.

Automotive Metallurgical Work *Becoming* More Diversified *as* Problems of Industry Grow More Complex

Visit to many plants necessary to get complete vision of metallurgical activities and possibilities at the present time. Practice varies considerably.

By P. M. Heldt

UNDER present competitive conditions in the automotive field the attention of the manufacturer, the dealer and the public is focused on two factors—retail price and quality.

Car manufacturers shape their policies with two major objectives in view, namely, keeping the selling price as low as possible and maintaining throughout the highest quality consistent with that price.

Price is a matter of manufacturing cost, plus sales cost, plus a safe and reasonable profit. Quality is a matter of materials and design.

Design is the problem of the regular engineering department, but the question of materials—that is where the metallurgist steps prominently into the picture.

Metallurgists with their X-rays, their microscopes, their scleroscopes and other testing devices have often corrected faults in the materials used for certain parts and by so doing have reinstated a car in the good graces of the buying public after it had acquired a reputation for doubtful behavior on account of those faults.

It is more properly the function of the metallurgist to prevent mistakes than to correct them, but in either case he serves a most useful purpose.

The metallurgist and the services he renders haven't just been discovered by automobile manufacturers. Every big plant has had its metallurgical department. But like everything else in the automobile industry, the scope and function of metallurgy have broadened and shifted considerably in the last several years and few manufacturers probably are utilizing their metallurgical departments in the same way as other manufacturers use theirs. Different practices have been set up in different plants and to get a complete vision of automotive metallurgical activities and possibilities at the present time it is necessary to visit many plants.

For instance, a good deal of work now is being done by some metallurgical departments on other than metallic materials. Chemistry is the science which constitutes the foundation of the metallurgist's training, and therefore any problem of a chemical nature is generally assigned to this department. Tests are regularly made on upholstering and top materials. These are tested for resistance to fading under the violet rays of a Cooper Hewitt mercury vapor lamp. Leather and leather finishes also are tested in this machine. It is generally assumed that exposure to the violet rays of the machine for eight hours has about the same effect as exposure to intense sunlight for forty-eight hours.

Most of the larger plants buy all their oils and greases according to specifications, rather than purchasing trade-marked brands, and it is the duty of the

¶ *High grade alloy steels, such as chrome nickel or 3½ per cent nickel steel, cost a great deal more than the ordinary carbon steel, and when automobile manufacturers first began to place orders for these more expensive materials they naturally wanted to make certain that they got what they paid for.*

¶ *Of course, it would have been possible to make the usual tests on tension-testing machines, but as the physical properties of a steel depend to a large extent upon the treatment it receives in the processes of fabrication, the steel maker was not in as good a position to guarantee these as he was to guarantee the chemical compositions.*

¶ *It was sometimes suggested to specify both the chemical composition and minimum physical values, but steel makers refused to furnish steel under such conditions. Chemical analysis thus became a necessity, and this was the origin of the metallurgical laboratory in the automobile plant, which developed into the metallurgical department as discussed in the accompanying article.*

metallurgical department to draw up these specifications and later to test the products received to make sure they meet the specifications.

The observations on which this article is based were made during a survey of metallurgical practices in a number of factories—factories whose combined annual output of cars and trucks will account for about 40 per cent of the industry's total production.

Cadillac Fatigue Tests

Most of the metallurgical departments do not go extensively into what may be regarded as research work, such as work with fatigue testing machines. They hold the view that the subject of fatigue is being covered very thoroughly by the Illinois Engineering Experiment Station and by several institutions in Europe, the results of which are published periodically. However, in a number of plants fatigue tests are being made on engine and other parts, as well as on standard fatigue test specimens. The Cadillac Motor Car Company, for instance, recently has been making fatigue tests of connecting rod shanks, the ends of a section cut from the shank being clamped in jaws and the part then subjected to rapidly alternating bending stresses. These connecting rods are made of chrome-molybdenum steel and are machined all over, and the section naturally is reduced to the minimum consistent with safety.

Fatigue tests are made by Cadillac also on valve springs. For this purpose a fixture is used which is not unlike a V-type engine. The springs are fitted to valves which are lifted the same distance as in the engine, by the usual camshaft, while the testing machine is run at a speed corresponding to 75 m.p.h. car speed. The springs are then subjected to maximum stress continuously and any weakness in them should show up quickly. Rear axle shafts are tested in the Cadillac plant for torsional strength by subjecting them to a torsion load of 32,000 lb.-in., which is 1000 lb.-in., more than the maximum torque which can be impressed upon them by the engine in low gear.

At the present time the materials for most of the major parts of automobiles are fairly well standardized. For instance, crankshafts are made for the most part of S.A.E. No. 1045 steel, connecting rods of 1035, camshafts of 1020 and so on. Therefore, in working up the designs for a new engine or a new car, the designer is largely governed by what may be called conventional practice. There is, however, a constant demand for progress, that is, for better results at less cost, and in connection with many parts the whole range of suitable materials which the market affords is studied and what appears to be the best is selected. This naturally, is work for the metallurgist, who is particularly equipped for it by education and practical experience. Whenever it is planned to use other than the more or less standardized materials for different parts, the metallurgist nowadays is consulted.

Shop Processes Worked Out

The metallurgist plays a prominent part in working out of shop processes. The constant aim of every manufacturing organization is to produce parts in the most economical way without prejudicing their quality. A great many steel parts are made by the drop forging, upsetting and similar processes. For economy the forging or other fabricating process should be accomplished with the least number of heatings, but the steel must not be worked while too cold, as this is likely to impair the grain structure. In the elaboration of these processes the production engineer and metallurgist, therefore, work hand in hand.

In the case of highly stressed parts the resistance to stresses depends to a considerable degree upon the direction of flow lines relative to the direction of imposed loads. In a toothed gear, for instance, it is very desirable that all flow lines run radially through the teeth. Ring gear blanks originally were made by taking a piece of flat stock of a thickness equal to the face width of the blank, slitting it along the center to within a short distance of both ends, expanding to an open form and then forging to ring shape.

Such a blank naturally gave a gear which had the flow lines run radially at two opposite points of the circumference, and transversely across the teeth at points 90 deg. therefrom, with the result that the teeth were of non-uniform strength. This difficulty is now overcome by sawing or turning a block from a round bar, of the proper length to contain the right amount of material, and then heating the blocks and flattening them under the hammer to the form of the gear blank. In other parts it is also considered essential that the flow lines have certain definite directions—in crankshafts in the direction of the length of the various members, and in connecting rods in the direction of the shank, rather than transverse thereto. The metallurgist can readily determine the direction of the flow lines by sectioning a part and deep-etching the section, when the lines are quite apparent to the naked eye.

Case Hardening

Case hardening is widely used in the automobile industry, such engine parts as the camshaft, pinion pins, tappets, cam rollers, roller pins, as well as the transmission gears of most cars being given the necessary surface hardness by this process. There is much scope for the work of the metallurgist in the control and improvement of this process. Numerous different carburizing agents are available in the market and their commercial merits depend upon a number of different factors, including, besides price, uniformity of chemical constitution, heat conductivity, rate of diffusion into the steel and the carbon content which they impart to the case.

Comparative tests of carburizing agents and routine tests of the material purchased thus are among the duties of the metallurgist. Moreover, the heat treatment given to the parts after carburization has an important effect on its physical properties. Parts that are not subjected to any severe stresses may be simply quenched as they come out of the carburizing furnace, but for all highly stressed parts it is necessary to refine the grain of the core by reheating and quenching from a temperature lower than that at which carburization took place.

Jordan Six Rear Axle

IN describing the new Jordan Six, page 51, Jan. 15 issue, it was stated that the under-mounted worm-drive type rear axle was of Timken manufacture. We have since been informed that the axle is the product of the Columbia Axle Co. of Cleveland, with the worm gear furnished by the Cleveland Worm & Gear Co.

SOME 700 sq. yd. of "Gaisman" rubber block paving, consisting of rubber cap vulcanized to a brick base, have been laid in New Bridge Street, London a heavy traffic artery.

Methods Developed *for* Measuring *Atomized Fuel* Particles

Foreign experimental work leads to interesting results. Spark voltages are determined by new British apparatus.

CONSIDERABLE experimental work has been done abroad in recent years with a view to developing methods for determining the fineness of division of atomized liquid fuels. Aside from its chemical constitution, an itemized fuel is of greater value the more finely it is divided and the more nearly uniform the sizes of the globules. The subject is of particular interest in connection with Diesel engines of the mechanical injection type, in which combustion follows the spraying of the fuel almost immediately. Methods for determining the average radius of the liquid globules in a fuel mixture were discussed in a recent issue of the *Zeitschrift des Vereines Deutscher Ingenieure* by J. Sauter.

The fineness of atomization may be defined by the coefficient $r = 3V/s$, where V represents a certain volume of fuel and s the total surface of the globules into which this volume is transformed by the spraying. This coefficient is merely the average radius of the globules. Non-uniformity of the globules, moreover, may be expressed by a coefficient of non-uniformity, which is a number without physical dimensions.

Among the numerous methods theoretically available for determining one or the other of these coefficients, only those deserve consideration which permit of rapid application. The apparatus required for one such method is illustrated diagrammatically in Fig. 1. The spraying nozzle is maintained at a constant electrical potential relative to the ground, and fuel is sprayed through the nozzle at a constant rate into an insulated reservoir which is connected to ground through a mirror galvanometer. Each globule of fuel on leaving the nozzle carries with it a certain quantity of electricity which is a function of its radius r, and charges the insulated reservoir with this quantity. The result is that a constant current i flows through the galvanometer, and it can be readily shown that $r = c\ V/i$, where c is a constant of the apparatus.

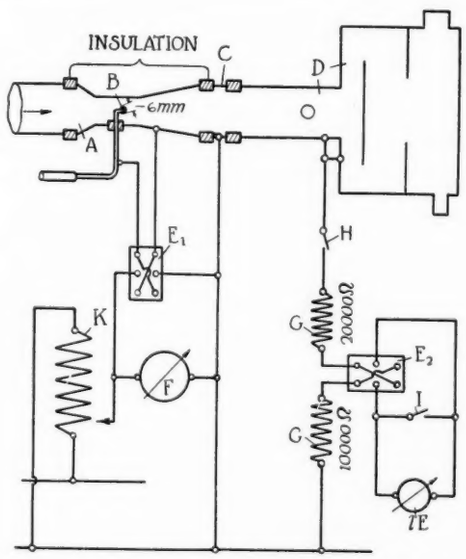


Fig. 1. Diagram of electrical method for determining relative size of fuel globules. A, air throat; B, nozzle; C, ring connected to ground; D, insulated reservoir; E_1, E_2, reversing switches; F, voltmeter; G, G, resistances; H, interrupter; K, potentiometer; lE, galvanometer

Another method for determining the size of the globules consists in determining their effect in reducing the intensity of a beam of light through which they are passed tranversely at a constant rate (a constant volume of fuel in unit time). We then have

$$\gamma = 75\ \frac{V\ D}{B\ u},$$

where D is the diameter of the beam; B, the rate of discharge of air and u the relative weakening (in tenths) of the luminous beam. This method therefore requires the use of a photometer. A correction must be made in the equation for very fine atomizations.

With the aid of these methods it is possible to properly judge the values of different methods of atomization. In one particular case the average radius was found to be 0.073 mm. (0.0028 in.). This dimension may vary from the thousandth part of a millimeter (0.00004 in.) to a tenth of a millimeter (0.004 in.). Experiments are still under way to determine the spraying methods which give the best results.

Measuring Spark Voltages

TWO apparatuses for measuring the peak voltages occurring in ignition circuits were exhibited by the L. M. Magneto Syndicate, Ltd., Coventry, at the Physical and Optical Societies' exhibition held in London, Jan. 4-6. Owing to the fact that very little energy is available in such circuits the measuring apparatus must be made extremely sensitive in order not to disturb the electrical relations of the circuit. One of the instruments is suitable for measuring peak voltages up to 300 volts and the other for voltages of from 2000 to 15,000.

Both apparatuses make use of a two-electrode rectifying tube to which is connected a small condenser. The

condenser is charged through the rectifying tube to the maximum voltage occurring in the circuit, and this voltage is then measured. Owing to the fact that electrostatic voltmeters of the ordinary type are not adapted for use with portable apparatus, in the larger of the two apparatuses the charge of the small condenser is shared by a larger condenser of known capacity. That is, the two condensers are connected together, so that the small one will lose charge and the larger one accumulate charge until both have the same voltage.

The larger condenser controls the grid voltage of a three-electrode rectifying tube. A definite voltage is applied to the plate, and measurement of the plate current then gives the voltage of the grid, and hence the voltage of the small condenser, which is the same as the peak potential which it is sought to determine, by simple multiplication.

In the second apparatus the small condenser is shunted by a calibrated spark gap formed by two brass balls 20 mm. (0.787 in.) in diameter. One of the spark terminals is fixed while the other can be moved toward or away from it by means of a cam, this cam being so shaped as to give a straight line relation between the dial (angular movement of the cam) and the voltage required to produce a spark. Each apparatus is mounted in a wooden box, which also contains a storage battery for supplying the filament current and in the set first described also a motor generator for supplying the plate current.

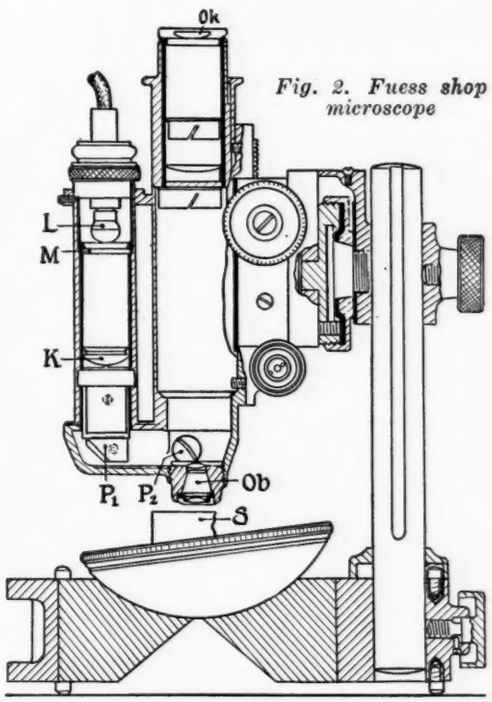


Fig. 2. Fuess shop microscope

A MICROSCOPE specially designed for use under shop conditions has been brought out by R. Fuess of Berlin Steglitz, Germany. The instrument is intended for the following classes of work: Simple metallographic investigations; determination of changes in structure, such as are caused by hammering, pressing, annealing and heating; determination of depth of case; surface examination of parts; acceptance inspection of machines, such as extension, distortion, twist, etc.; investigation of the homogeneity of materials; investigation of alloys with respect to components and homogeneity, and rigidity tests.

The microscope is intended for use not only by the metallurgist but also by foremen and suitably trained workmen. This at once eliminates inspections with transmitted light and polarized light and restricts the instrument to the use of projected light.

The instrument comprises a vertical column secured to the base, on which the microscope tube can be adjusted by means of coarse and fine adjustments to any desired height within its limits. Rigidly connected with this tube *Ok-Ob* is the illuminating device. The base of the microscope is developed as a table, into which can be set a spherical segment for the support of the object to be examined, the spherical surface of the segment permitting of tilting to any angle. The segment can be removed and the base, which is provided with a V-slot on the under side, can be set directly on a part to be inspected, such as a shaft. Instead of the adjustable segment, a plane disk may be placed on the base.

As may be seen from Fig. 2, it is possible to turn the column in the base, which makes it possible to examine large parts that cannot be placed on the table. In addition, it is possible to swing the microscope tube around a horizontal axis through 180 deg. to both sides, so that the tube can really be turned in any direction.

Illumination is effected by means of a small 4-volt incandescent lamp *L* which can be supplied with current from a small battery or directly from service mains by the use of a transformer or a suitable resistance in circuit. After being passed through a mat lens *M* for the purpose of diffusion, the beam passes through the condenser *K* to the prism P_1, which throws it onto the rotatable prism P_2 by which the object to be examined is illuminated.

A camera, which is attached directly to the ocular, permits of obtaining a photographic record of the microscopic image. In that case a projecting ocular is put in the place of the observation ocular. For special purposes requiring very intense illumination, photographs can be taken by arc light.

As regards the lens system, five different objectives and three oculars permit of magnifications from 33 to 560. With the camera with ordinary illuminating system *L* the magnification ranges between 25 and 180. The microscope weighs only 20 lb. and is therefore easy to handle.

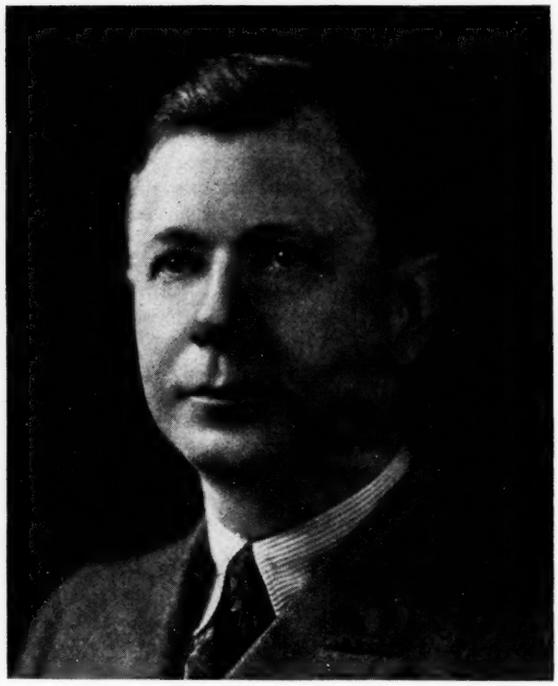
MICHELIN, the well-known French tire manufacturer who has long been the leading champion of the clincher as against the straight side tire, has now adopted the drop channel type of rim and a corresponding type of balloon tire which is a development of the old Dunlop bicycle tire. The cover has inextensible beads and is claimed not to leave the rim under any circumstances, not even when fully deflated. The inner tube which goes with these tires is similar to that manufactured heretofore, except that the valve stem is bent to form a right angle and at the foot of the valve a comparatively heavy flap of rubber is incorporated in the wall of the tube. The tread of the covers is different from that heretofore used. It is an anti-skid or, as Michelin used to call the type, a "sculptured" tread, and is claimed to have unusual anti-skidding qualities.

Michelin also has adopted a new method of designating the size of tires which corresponds to that now in use in this country; that is, instead of giving the outside diameter of the tire he gives the base diameter. Besides, he now uses the centimeter as the unit of measurement, instead of the millimeter, which has been the unit commonly employed in expressing tire dimensions in Europe heretofore.

Machinist at 18, President *of* Hupp *at* 47

That is life story of DuBois Young, who entered industry on a free show pass.

By John C. Gourlie



DuBois Young

IN the winter of 1902, on a morning chill and gusty as only Chicago can be in March, a lad of 23 surrendered his ticket at the gate of the Coliseum and entered to view the dashing new products of a peevish infant industry, then, as measured by the national automobile shows, in the second year of its life. The lad was DuBois Young. Reddish of hair and rubicund of complexion, he was then as now called "Pink" by his intimates.

The visit was made casually and on a ticket given to him—an important point, as funds were scarce in those days. But once within the Coliseum he was straightway seized as badly with the automobile virus as anyone ever has been and on that day a career was started that was destined to bring the young man to the presidency of the Hupp Motor Car Corp.

Young, already an expert machinist by trade and a night student of engineering, naturally and by inclination was drawn to the motor car, though the industry was still largely in the hands of the inventors. The dawn of the big production era found him ready with the manufacturing experience and the business sense required for success in the new period and though today he is only 47, the reward of his ability has already been great.

Needless to say, Mr. Young does not think of himself in this light. He considers himself more as the victim of circumstances or possibly the favored child of fortune rather than as having accomplished an extraordinary feat of personal and industrial progress. "Many men have, and thousands of men could have, done what I did," he says. "I have been fortunate in being one of the group that was accumulating the proper experience to help develop and expand this wonderfully interesting industry."

At 18 he had served his apprenticeship and was a full-fledged machinist

Those in position to know say that the Hupp corporation today is to a material degree the product of his vision, knowledge, and application of sound fundamentals. In an industry that has had perhaps more than its share of disturbance and failure, Hupp is respected everywhere for its steady progress and its success in avoiding the rocks and shoals that have brought disaster to many an ambitious project.

The irrepressible nickname "Pink" is more than an accident of Mr. Young's physical appearance. His is the sort of personality that readily calls forth a friendly phrase or greeting he has kept himself human and cultivated friendships. The formal manner is obnoxious to him; he gets results through cooperation rather than command. His modesty and his belief in team-play have led him to avoid public attention to his own personality and accomplishments. Except to his intimates, little has been known of his ideas, the reasons for his entry into the automobile business and his rise to the top of his company.

But since coming to his present position, he has found himself constantly under pressure to reveal more of his early life and his ideas about the automobile business. He has realized that the chief of a large corporation in these days is hardly able to avoid some publicity without subjecting himself to misunderstanding. Therefore he consented to give *Automotive Industries* the first interview he has ever granted involving himself personally.

Although his life has some of the easily distinguishable outlines of the now-familiar "success" stories, the chronicler is able to report that Mr. Young, obliged to shift for himself at an early age, still has reached fame and fortune without having to hold down two or three jobs at a time and taking a correspondence course in concentration or memory training during his spare moments.

While Mr. Young takes his business seriously, he has always got fun out of his work, and he has found time to play. He is well pleased when his golf score shows symptoms of improvement.

He was born July 7, 1879, in the hamlet of Greenville, Ohio, the son of William A. and Hannah (DuBois) Young. His father was in the contracting business. Obliged to leave school at 14, he went to Indianapolis and found employment as an apprentice in the Atlas Engine Works, maker of steam engines.

"When I was 18 I had qualified as a machinist and was making as much as $1.75 a day," said Mr. Young in recalling his first efforts at making a living. "I had acquired a good deal of the spirit and outlook of the working men of those days and I had listened attentively to their glowing stories of life and high wages in other parts of the country. They were a roving crew who never stayed long in one spot and I wanted to be one of them."

Wanderlust affected him and he rode a freight train with a chum to Montana

Accordingly he went to Chicago, incited by reports of "big money" paid the machinists there. In one year he held 14 jobs and then wanderlust again affected him and he rode a freight train with a chum to Montana. In 1902 he was again back in Chicago and after his visit to the automobile show was ready to turn his back on the care-free, wandering life that he had shared with the roving machinists.

The automobile then was the horseless carriage, the plaything of millionaires, the hobby of fanatical engineers and mechanics and the abomination of good solid folk who hitched the mare to the buggy of a Sunday afternoon. But Young allied himself with the fanatics. "After that," he says, "I could think and talk of nothing but automobiles. They appealed to my mechanical sense and training in the making of tools and engines.

"To say that I foresaw the tremendous development in store for this new means of transportation would be exaggeration. But my experience had been mainly with steam engines and I thought I could see greater possibilities in the improvement of the new gasoline engines."

Despite Mr. Young's deprecation there is evidence that he was exercising the bent for prophetic vision that has since been so valuable to him and to his company. The singleness of purpose with which he was to pursue his new interest reveals the force of his belief in the future of the industry.

He went to Detroit, but the Olds plant was then the only one active there and he was unable to obtain employment. But he refused to abandon his idea of engaging, however humbly, in the making of motor cars and returned to Indianapolis, where he joined the Premier Motor Car Co. as a machinist. He buckled down in earnest and in the period from 1902 to 1909 he rose rapidly through the intermediate positions to that of general foreman.

As part of his experience with Premier, he supervised the building of the largest four-cylinder air-cooled engine in America. This was a racing job, for through the track the new industry was still establishing its sales outlets to the wealthy people of America.

In the Premier company he became a friend of Charles G. McCutchen, who was in the selling and general administrative ends of the business, and who was desirous of launching an enterprise of his own. He sought Young as his production man and the American Gear & Manufacturing Co. came into being, with no plant and a negligible capital.

By high-pressure salesmanship, the Chamber of Commerce of Jackson, Mich., was induced to put up a factory, and the company was given 15 years to pay for it. The Chamber, needless to say, has never had occasion to regret this venture. The partners bought a carload of machinery on time in Indianapolis, shipped it to Jackson and soon were in production of automobile parts.

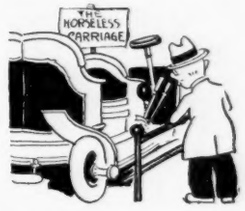
About this time also the Hupp Motor Car Corp. was getting into production and it ordered 25 rear axles from the American Gear & Manufacturing Co. Later orders were much larger and Hupp was always the best customer of the Gear company, but other buyers were found as the reputation of the company grew for close, conscientious manufacturing.

In 1915 the automobile industry was having a bad year and Hupmobile was particularly in need of a production man. Mr. Young, who by that time was well settled in Jackson, was invited to Detroit to look into the workings of the Hupp plant.

"I had a serious decision to make when I was asked to take charge of the reorganization of the factory," said Mr. Young. "I had a good business in Jackson, my home was there and the advantages of the change were not immediately apparent. So it was more the idea of protecting our business with the Hupp company than any other that I consented to a temporary arrangement."

But this was not satisfactory to the directors of the company. They wanted Mr. Young permanently and offered him a handsome price for his holdings in the Gear company. This seemed too much like desertion of his partners, however, and he declined, whereupon the Hupp corporation purchased the entire stock of the Gear works, which is still supplying Hupp units.

For the first two years of his association with Hupp, although in complete charge of production, he had no official title. He was then made works manager and later vice-president in charge of manufacturing. Mr. Hastings, who had retired, was in 1917 induced by the directors to assume the presidency of the company. When later in 1926 he was made chairman of the board of directors, Mr. Young was elected to the office of president and general manager.



Entered Chicago show on a free pass and was straightway seized with the automobile virus

In 1915, when Mr. Young came with the company, the plant was still entirely on an assembly basis and production was not increasing. He changed the methods, making a complete self-contained series of plants able to produce complete cars and the growth constantly increased to 37,000 cars in 1925 and over 45,000 in 1926, with a greater capacity in 1927.

The capital for these improvements and expansion had to come out of the earnings and Mr. Young's experience in the upbuilding of the Gear company was of great value in the upbuilding of Hupp.

He also had the faculty, which has been a dominating factor in his success, of being able to enlist the loyal cooperation of his associates. He has rewarded this loyalty by keeping with him the men who grew with the business, and in a dozen responsible Hupp positions today are men who worked with him 20 years ago.

"This is the greatest enjoyment I get out of business," says Mr. Young, "and if it were all work, it would

hardly be worth doing. I like to feel that the men in my company are my friends and that they can come to me with their problems and with their mistakes, as well as their successes, talk them over and know that they will have sympathetic understanding."

Mr. Young's unwillingness to hold himself aloof is immediately apparent to even the casual visitor to the Hupp offices, for though the door to his room is marked "Private" it is almost always wide open and anyone who passes in the hall can see him working at his desk or in conversation—the word "conference" seems out of place in this connection.

When the open door was mentioned to Mr. Young his ready smile broadened as he answered, "There may be another reason. You know, if the door were shut I might have my feet on the desk instead of attending to my business and the other men might be doing the same thing."

Although Mr. Young's work for years was largely in production, he has taken a constantly increasing interest in sales activities and he has carried his personal contacts into the field. He knows all of the Hupmobile distributors and many of the dealers as well. The Hupp policy of dealer relations, which has been widely admired, has as its basis a desire to make the lot of these merchants pleasant as well as profitable.

Morale High Among Dealers

By permitting distributors and dealers to reduce sales quotas, on due warning, if the market does not warrant continuance of shipment on the scale originally set; by rebating on cars in stock when prices are cut, and by devices to assist in profits on parts, the Hupp corporation has maintained the morale of its merchants.

The policy of Hupp over a long period, of which the most striking manifestation has been the avoidance of sensational innovations in sales or production methods, of disastrous reactions through over-expansion, and of disruption of company spirit and organization through constant changes in important positions, prompted a question concerning Mr. Young's thoughts on basic business principles.

"We do not want to stand still; we want to develop and expand," he replied. "But we do not believe in risking the prosperity of the company, which is our obligation to its stockholders, by sudden expansion of facilities or uncalled-for changes without the almost certainty of improved methods and improved financial results.

"A company that is established on a solid foundation is capable of surviving a business recession, if it is amply financed, has experienced executives and wide distribution through reliable merchants who can be depended upon if the market slumps to go out and sell at least a fair proportion of their usual quotas.

"A company thus guided and thus organized can be built up by elevating the men in its ranks and not by enticing high-powered executives from other companies with ideas that probably are sound enough in themselves, but which may not harmonize with the policies, or solve the problems, of their new positions. Besides, the company's morale is made just so much stronger because the men in the lower positions know that they will be in line for promotion as the company expands and the older men drop out."

Mr. Young is a strong believer in delegating responsibility. He himself is in close personal touch with all activities of the business, not because he does not trust his men, but because he is interested and wants to know what they are doing.

Speaking of his experiences as a machinist, and later as an employer, Mr. Young says, "Having been an employee in many capacities in the shops, I really think I know the workers' problems and ambitions, and from this experience and the associations which it brought have evolved some very decided ideas as to conduct of our shops and the welfare of our employees. I am a strong believer in the piece work method of employment, at rates that will insure good wages to competent workmen."

Airplane Accidents Analyzed

TWENTY-TWO per cent of airplane accidents controlled by the French Aerial Navigation Service are attributable to engine defects, according to Henri Brunat, chief of this department. Probably the percentage should be placed somewhat higher, for a certain number of non-fatal accidents are not reported to the authorities.

The order of importance of engine defects is as follows: Mechanical breakages, defective water circulation, defective lubrication, poor carburetion, and defective ignition.

Valves and valve operating gear, comprising the valve itself, valve springs, rockers and push rods, head the list of mechanical breakages. Piston breakage comes next. Connecting rod and crankshaft breakage is now rare and can generally be attributed to lubrication defects. The most frequent cause of breakdown on old-type engines is the presence of cracks in the water jackets, caused by differences of dilatation.

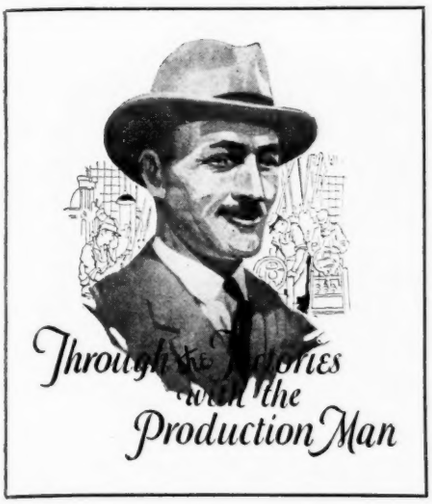
In 1923, 12.09 per cent of deaths were due to fire while in flight. Safety measures applied in 1924 reduced the percentage to 1.30 for that year. Later the percentage increased until it became 13.23 per cent during the year 1926. Deaths from fire while on the ground were 16.07 per cent in 1923. The following year safety measures reduced them to 11.76 per cent, but in 1925 they increased to 17.27 and to 26.46 for the year 1926.

An examination of the fire accidents shows that 28 per cent were caused by blow backs into the carburetor, thus igniting the gasoline overflowing from the float chamber, escaping from a badly made connection, or having been allowed to accumulate under the engine housing. Connecting rod breakage was responsible for 24 per cent of the fatal fires; 6 per cent were attributed to defective valves or valve operating gear; 4 per cent were classed as due to defective operation of the engine, without any further precision; 2 per cent were due to loose ignition wires on rotary engines.

Dry sump lubrication and other means for keeping the lubricating oil at a low temperature, so as to avoid leaks, is one of the measures recommended to diminish fire risks. Gas and oil tanks should be isolated from the engine housing and should not be immediately behind the engine. A fire curtain between the engine and the gas tank is not sufficient: the protection should be continued on the sides of the tank.

Instantaneous emptying of the gas tank in case of a fire alarm has been found unsatisfactory. Owing to the air currents, the liquid is thrown over the fuselage and thus causes the fire to spread. Dropping the gas tank in case of danger has given better results, statistics showing that in 20 per cent of cases pilots have escaped disaster by this means. Instantaneous stoppage of the engine is recommended, and to make this possible the plugs should be of a type not liable to preignition.

Several serious accidents have shown that the most dangerous position for the passengers is in the forward part of a fuselage extending beyond the wings.



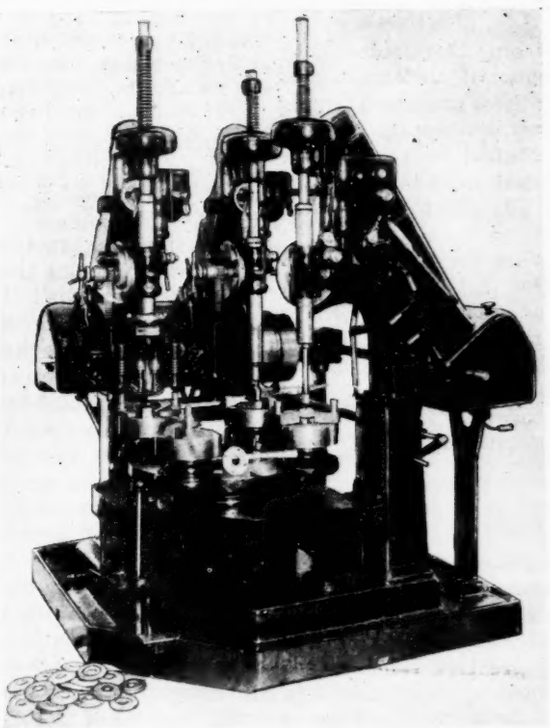
Gearcase Cover Plates Finished *at* Rate *of* Six Per Minute

Unusual gang drill performs several production operations in short time and permits the use of rotating index table.

ONE of the large producers whose output exceeds 2500 units per day recently has installed an unusual gang drill for the production of several operations on a gearcase cover plate. The outstanding feature of this installation is the arrangement of the three spindles, which permits the use of a rotating index table and eliminates the old trouble of passing jigs back and forth on a relatively long table. In the layout described here, the piece is loaded or chucked but once at a loading station and then indexed around to three successive operations. Thus three pieces are in process simultaneously.

As shown by the accompanying illustration, the machine is a Barnes Drill Co. semi-automatic gang drill which incorporates three separate drilling units. Each of these units, which is fully equipped and has eight changes of speed, is placed so that the spindle is at one corner of a square. The fourth corner of the square provides the loading station. The three units are mounted on a common base plate which also supplies support for a heavy table. The latter in turn carries the indexing table which mounts four Foster-Barker wrenchless chucks which serve as vises or fixtures for the circular castings. Three jaws center the castings in the proper position for machining.

In addition to the separate changes of feed at each unit, each spindle is equipped with a separate cam feed and spring return. Synchronism of operation for the three spindles is maintained by a common control which is interconnected with the treadle-operated index plug for the rotating table.



Three cam-fed spindles are placed equidistantly and synchronized so that a variety of operations are performed by one man at the production rate of six pieces per minute

As shown here, the flange casting is loaded at the station in the left foreground. At the first operating station at the left rear, the unit is equipped with a special five-spindle head. Four of these spindles carry drills for the bolt holes in the flange while a center spindle drives the drill for the large center hole. All five of these drills are guided by a jig plate which descends with the multiple head and pilots over large diameter dowels on the Foster-Barker chucks, which are bolted to the rotating table.

At the next station the end of the hub is face milled, the operation being guided by a pilot which extends into the center hole produced in the previous operation. The advantage of cam feed is realized at this station. As at the other two stations, the control cam brings the spindle down rapidly to the point of cutting and then reduces the feed to normal cutting rate. At the predetermined point, feed ceases but the spindle is not retracted immediately, as short circumferential section on the periphery of the cam allows a period of dwell in which all natural deflections return to normal with the result that finish dimensions are very uniform.

At the fourth station a shell reamer is passed down through the large center hole produced at the first spindle. Due to the eight available speeds for each unit and the fact that the control cams are readily interchangeable, the machine can be switched to other operations at no great expense. The normal rate of production is six pieces per minute, and the various operations are handled by one man at a considerable saving.

Motor Conference Outlines *1927* Stand *on* Legislative Questions

Still opposed to compulsory automobile liability insurance. Favors taxation for road improvements only. Not convinced that state regulation of common carrier business is needed.

IN a series of bulletins recently published, the Motor Vehicle Conference Committee, representing the five leading automotive organizations of the country, outlines its legislative program for the year.

The committee still is opposed to compulsory automobile liability insurance; it favors the automobile taxation theory which provides for adjustment of general and special motor taxation on a basis of use of motor funds for highway improvements and which does not constitute an unfair burden on the individual motorist; it still seeks greater uniformity among state laws controlling operation of motor vehicles; it is not at all certain that state regulation of the business engaged in by common carrier vehicles would be to the best interest of all parties concerned, but offers principles upon which intra-state regulation, if decided to be necessary, might be based.

The opposition to compulsory liability insurance is based on the fact that practically nothing as yet is known of the need of such a law or its effect upon accident prevention, whereas its cost to motorists would be enormous.

The committee points out that only three states have any figures showing the amount of uncompensated motor vehicle accident losses and these are based largely on estimates; only 10 states require reports of such accidents to be made to some central body; only five states provide for compulsory local records, 14 collect wholly inadequate records and 20 collect no accident records at all.

In the absence of figures showing the amount of uncompensated losses, the committee feels it to be unfair to burden motorists with insurance to cover these losses which, when actually determined may be relatively small. It has been estimated that the cost of compulsory insurance to the motorists of the country would be about $450,000,000 a year, and it is very doubtful that the total amount of uncompensated losses is anywhere near that much.

Two Types of Service

In discussing its views on state regulation of common carrier motor vehicles, the committee points out the essential difference between passenger and freight carrying operations. In the former, regularity and inflexibility of service are of the greatest value to the public and this aim might be aided by regulation. In goods transportation, however, the chief value of motor vehicles to the public has been its flexibility of service, particularly in emergencies, and this would largely be destroyed by regulation.

If it should be decided that regulation will best serve the interests of all interested parties, the committee suggests the following principles be employed in drafting and adopting laws.

1. All control should be exclusively in the hands of the state; no power should be vested in the governing bodies of any political sub-division of the state.
2. State control should be placed in existing commissions.
3. As a prerequisite to operation of motor vehicle common carriers the operator should be obliged to obtain a certificate of convenience and necessity and to take out liability insurance.

Should Exercise Same Power

4. The state regulatory bodies having control over motor vehicle common carriers should be vested with the powers they exercise in controlling other forms of public utilities.
5. Taxes on motor vehicle common carriers should consist of those imposed by the state upon motor vehicles in general, the proceeds to be first applied to maintenance and any surplus to other costs of highways, and proper and equitable taxes in exchange for franchise rights, provided that if such taxes are adopted an amount equivalent to those paid should be deducted from the general taxes mentioned before.
6. Legislation should be adopted enabling steam railroads, electric railroads, shipping companies and other public utilities to own and operate motor vehicles in conjunction with their regular lines of business.

In imposing restrictions upon the weight and size of motor vehicles there are two questions to be answered: First, shall the restrictions upon weight, size, speeds, etc., be reduced to the capacities of the weakest highways or parts thereof, or second, shall all highways be lifted up to standards of improvement adequate to carry the biggest, heaviest and swiftest loads that users desire to place upon them?

The Motor Vehicle Conference Committee believes that there is a compromise between these two opposing views which motor vehicle manufacturers in designing their products, highway engineers in designing their roads and bridges, and public authorities in maintaining and regulating traffic, would do well to follow. What this compromise consists of is indicated in the committee's recommendations for size, weight and speed restrictions which are printed as part of the bulletin.

Beginning with the statement that the total motor vehicle tax bill in 1926 was $735,226,191, the committee report on special taxation for motor vehicles lays down a few principles upon which, it believes, such taxation should be based. Briefly, these are:

1. The state should be the sole taxing agency.

2. The tax should be simple and equitably distributed among the various types of vehicles.

3. No highway should be improved in excess of its earning capacity.

4. All money raised by special motor vehicle taxation should be placed under the control and expended under the direction of the state highway department.

5. The cost of building and maintaining highway systems should be equitably distributed, according to the benefits received, among society in general, definite groups of society, owners of property served and the road users.

6. For cost apportionment purposes all roads may be divided into two classes, those which serve the general public and those which perform a purely local service.

7. Special motor vehicle taxes should be used only for work done upon the first class of roads.

8. In allocating motor vehicle tax receipts to actual projects preference should be given first to the maintenance of inter-state and state highway systems; next to maintenance and reconstruction of all roads of general motor use, and finally construction costs of highways of general motor use.

9. Roads of purely local interest should be financed from local revenues.

Tire Wear is Low on Oil-Treated Roads

FOR the third year the Engineering Experiment Station of the State College of Washington made a series of tests last summer on the effect of road surfaces of different kinds on the rate of tire wear. Last year for the first time balloon tires were used in the tests. The cars used were two nearly new Oakland coaches which with driver and load weighed 3750 lb. each. The tires were in excellent condition and the four-wheel brakes were properly adjusted.

The method of cleaning and weighing the tires was the same as in the previous tests, of which accounts were published in *Automotive Industries* of April 9, 1925, and May 6, 1926. However, in the case of tests on oiled highways the tire treads seemed to become glazed with a film of material consisting of oil-bound dust, presumably derived from wear on the surface of the road itself. As the customary brushing before weighing failed to remove this film, each tire was subjected to additional cleaning by rubbing with dry waste or cheese cloth until the glaze was removed.

Inasmuch as it seems likely that the oil treatment of crushed-rock highways will figure extensively in the future highway program of the State of Washington, plans were made for extensive tests on the best oiled highways available.

The test courses included a 16-mile stretch of crushed basalt macadam between Pullman and Palouse, a nine-mile stretch of cement concrete between Colfax and Steptoe, a 144-mile oil-treated, crushed basalt macadam road between Pendleton and The Dalles, and an eight-mile stretch on Lewiston Hill, of crushed basalt macadam.

31 x 5.25 Balloon Tires

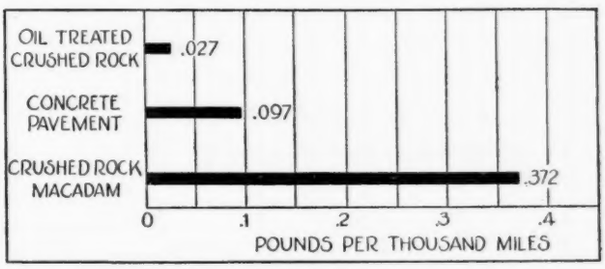
Both cars were equipped with 31 x 5.25 in. balloon tires. At the beginning of the tests the tires on the two cars had run 3900 and 1800 miles and were about four and two months old respectively. The treads showed only a normal amount of wear for this mileage. Throughout the tests there was no evidence of abnormal wear or of injury by accidents to the casings. Each of the cars maintained perfect wheel alignment throughout.

In the tests on oil-treated, crushed-rock macadam roads it was found that the weights of the tires were affected by oil absorption. Previously the test cars had been used on clean pavements and on dry gravel roads. For the first 300 miles the tires apparently took up more oil from the highway than they lost in rubber worn off. After that the loss in weight due to wear exceeded the gain due to the absorption of oil. Continued tests did not reveal any further absorption of oil. If it be conceded that the tires had become saturated with oil in the first 300 miles of operation on oil-treated highways, then the subsequent tests show only the normal wear taking place on the oiled road surface. A study has been undertaken but no conclusion has been drawn as to the effect on the tread rubber of long-continued use on oil-treated highways.

Rates of Tread Wear

The rates of tread wear on the different kinds of highway are shown in the diagram herewith, and from these figures the following conclusions are drawn:

If the average cost of tires in terms of pounds of tread rubber which is worn off the tire be taken as $10 per pound, a traffic of 500 cars per day on a good crushed-rock highway will cost the motorists $2590 in



Tire wear on different road surfaces

tires per mile of highway per year. The cost on good cement concrete pavement would be $672 per mile and for oil-treated surface in good condition $188 per mile per year.

The above figures on crushed basalt macadam are based upon the results derived from tests on 6683 miles of travel. The figures on concrete pavement are based on 3431 miles of travel. This mileage is sufficient to establish the accuracy of the results pretty thoroughly. On the other hand, the results of the tests on oil-treated highway are based on a total mileage of 1804, of which 600 miles were traveled before the tread wear exceeded the oil absorption. Therefore, the results of the tests on oil-treated macadam are based practically upon but 1200 miles of travel and their probable accuracy should be considered accordingly.

A full report of the 1926 tests is contained in Engineering Bulletin No. 18 of the Engineering Experiment Station of the State College of Washington, Pullman, Wash., from which the above information is abstracted.

Entire Automotive Industry Can "Cash In" *on Shop Equipment Exhibits at the Shows*

New interest in car maintenance has been aroused and right kind of cooperation between car manufacturer, dealer, jobber and equipment maker will boost business.

By Leon F. Banigan
Editor, Motor World Wholesale

THE automobile industry now is assaying the maintenance machinery and tool equipment exhibits which were held this year in the national shows and which are being held in several sectional automobile shows.

The verdict is certain to be that they are very decidedly a paying proposition for the manufacturers and jobbers who have staged them. That they have done much toward strengthening the trade significance of the 1927 shows is apparent. Tremendously increased trade attendance has been the rule. Actual show sales of thousands of dollars' worth of equipment and tools are being reported. And in addition, the activity has provided experience from which many profitable lessons have been learned.

But the big job—that of cashing in on the idea—remains. And in that job success will depend largely upon the extent to which car manufacturer, dealer, jobber and equipment manufacturer cooperate. The maintenance equipment exhibits will not have accomplished much that is lasting for the industry if the net results are merely the sale of a few more units of shop and tool equipment. That they should do so is most desirable, of course. But what is of infinitely more importance to our industry is that the shop equipment exhibits shall awaken in the minds of the entire industry a true picture of the tremendous importance of maintenance in the present automobile dealer set-up—and the opportunity for profitable merchandising of maintenance with the aid of modern time and money-saving machinery.

Factory Aid for Dealers

We know from personal contact with many distributors and car factory executives at the national shows that the benefits of the shop equipment exhibits need not be confined to those who actually reaped a profit from sales in the shows. Not a few factory executives left the New York show with a vivid appreciation of the necessity on the part of car factories for constructive and helpful work among their dealers in the selection and use of modern repair shop machinery. Some car factories, during the past year, have made rapid strides in this direction, a few of them giving much study to the subject and providing, among other things, recommended shop layouts for dealers doing various volumes of business. There is room for much more work of this nature by car manufacturing organizations and the shop equipment exhibits in the shows of 1927 will undoubtedly help speed this work.

Closer cooperation and understanding between the car manufacturing and distributing organizations and equipment makers and jobbers is coming these days—another good omen for the entire industry.

Stage Set for Big Year

The stage seems set for a most profitable maintenance year from manufacturer to cross-roads repair shop. New car production probably will approach the record figure of 1926. But whether new car production is up or down in 1927, the 22,000,000 motor vehicles on the road today will constitute a maintenance market of greater proportions than ever before.

Lower unit prices of cars, the used car problem, the increasing number of repair shops and retail car dealers, the shrinking number of first-time car buyers, the fiercely competitive trade conditions that have resulted from all these things emphasize the necessity for profitable operation of maintenance and supply departments in the retail dealer organization. Merchandising of maintenance, coupled with more efficient and economical operation of repair departments through the use of modern machinery and methods, seems a logical step, therefore, and one to which the entire industry may profitably address itself.

Another phase of the present situation is that flat rate repair practice is rising rapidly. Hit or miss methods can't survive the present competitive market. Attracting repair work to the better equipped shops by teaching these shops how to effectively merchandise their service will make it harder for those who do not deserve the business because of their poor methods and work.

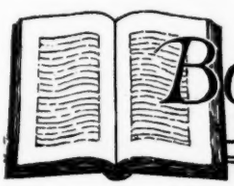
Better merchandising of maintenance will create more contacts between dealers and car owners—contacts that will not only sell maintenance but will bring new car sales and many accessory sales and installations.

The maintenance merchandising idea butters bread not only for the maker of shop equipment and those interested in its sale but for the dealer first of all and through him for the car distributor, car manufacturer, accessory manufacturer, replacement parts manufacturer and everyone else who makes his contact with the ultimate consumer through the dealer.

Already many benefits have accrued from the shop equipment exhibits and so far there is every indication that the idea will be repeated next year. With some few exceptions, trade attendance and show sales have been beyond expectations. By and large, the benefits derived from this year's exhibits were in proportion to the force and effectiveness of the demonstration and merchandising by the equipment makers and the jobbers. In a few instances where lines did not lend themselves particularly to the demonstration idea immediate results naturally were less spectacular. A wrench maker, for instance, who made a very interesting display of his line in the shows obtained satisfactory contacts. But another who demonstrated the use of his wrenches with a car in his exhibit was highly enthusiastic as to results.

The shop equipment exhibits also developed benefits for those who participated that were not strongly a part of the early conceptions of the opportunities the idea presented. Many jobbers took their sales organizations from booth to booth in the national show exhibits, got a thorough selling on the lines they handle, and obviated much time in missionary work at sales meetings in the jobber establishments later. Some jobbers provided salesmen with cards upon which the signature of the factory representative was to be obtained at the end of his "selling lesson" in the show. Jobber salesmen were most effective in bringing in trade customers and in making contacts with service station and repair shop men some of whom will be in the market for equipment when the money from spring trade begins to come in.

A sprinkling of car manufacturers have done constructive work in their individual dealer organizations. The maintenance equipment manufacturers in some instances have engaged in effective pioneering. Jobbers and jobber salesmen have done much to carry the message of better equipped shops to the dealer and repairman. And now shop equipment exhibits in the national shows and a score of sectional shows have fanned to white heat the trade's interest in the opportunities in maintenance equipment. To what extent will the industry follow up and cash in on this latest development?



Books for the Business Bookshelf

Fixing Wage Rates

Wage Scales and Job Evaluation. Merrill R. Lott. The Ronald Press Co., New York. 161 pp. Illus. $5.

AN important problem—often unrecognized—which confronts all executives is that of so adjusting the base wages rates of their employees that the wages paid any one occupation bears a proper relationship to those paid for other lines of work. The particular requirements of an occupation vary widely among different plants so that payment of the general wage rate for that occupation often fails to do justice to the employee as well as to the employer.

In this book Mr. Lott outlined a plan for evaluating each job in a plant in terms of its value to the success of the enterprise and then fixing a wage rate for it which will be in harmony with rates paid for all other plant occupations. His method consists of determining just what the influence of various factors such as experience, education, time required to become expert at the job, physical requirements, etc., is in the occupation under consideration and then, by weighing each one of these factors according to its influence, to evaluate the job in relation to other jobs about the plant.

The method outlined appears to be practical and adapted to use in any type of enterprise where wage rate determination is a problem.

How to Manage Sales

Sales Administration. Walter S. Hayward. Harper & Brothers, New York. 498 pp. Illus. $5.

THIS book deals almost exclusively with the problems which confront the sales manager of a manufacturing concern in analyzing his product and markets, in planning advertising campaigns, setting sales quotas and the other items which, by a very strict interpretation of terms, might be called elements in sales administration as contrasted with sales management.

The book is well illustrated not only with items of a pictorial nature but with excerpts from the experiences of countless successful sales managers. It should prove of considerable value to all who have a hand in the formulation of sales policies.

Examination of Workers

Physical Examinations in Industry. Industrial Health Series No. 2. Metropolitan Life Insurance Co., New York. 40 pp. Illus.

BELIEVING in the value of physical examinations of workers, not only before their employment but periodically throughout their service, the Policy Holders' Service Bureau has prepared this little booklet which contains considerable information on the subject. Reasons why periodic examinations should be given are followed by brief outlines of what the examinations should consist and how they should be made. Then follow information in regard to cost and equipment necessary, forms for recording results of tests and a bibliography.

Researches in Metallography

Metallographic Researches. Carl Benedicks. McGraw-Hill Book Co., Inc., New York. 307 pp. Illus. $4.

THIS book is made up chiefly of lectures which were delivered by the author during 1925 in the United States and which dealt largely with research work performed by the Metallografiska Institutet at Stockholm, with which author is connected.

Subjects of the lectures are: The kenetic constitution of matter; homogeneous thermoelectric and electrothermal effects; hardness in steels and alloys; meteoric iron and invar; some improvements in high power microscopy; a microchemical etching method for metallography; first discoverer of the critical point A_c in steel; fundamental factors for obtaining sharp thermal curves; determination of the specific gravity of molten iron; a rational ingot section for hard-rolled material; and action of hot wall on water tubes.

Just Among Ourselves

Brisbane Gets His Facts Twisted

OUR none too taciturn nature sometimes gets near to boiling point and never so near as upon the reading of positive statements by men of prominence which simply are not in accord with well-known and obvious facts. The habit of gaining public applause by dynamic and dramatic statement seems to be growing on our writers more every year, while regard for truth and accuracy sometimes seems to be developing in exactly inverse proportion. Listen to this from the pen of no less a notable than Arthur Brisbane: "Men that manage Britain's flying force actually FLY. That seems very strange in this more conservative country, without adequate air defense, it's flying in the hands of men that know as much about practical flying as a turtle knows about ice making."

* * *

They're All Experienced Aviation Men

BRISBANE'S statement just isn't true. Our flying certainly may be said to be in the hands of the assistant secretaries of commerce, Navy and war at the present time. F. Trubee Davison learned to fly in 1916, organized the first Yale aviation unit, helped train aviators during the war, and had more than 200 flying hours and more than 15,000 miles of flying to his credit while in the U. S. N. R. F. C. He has flown 6000 miles since becoming assistant secretary of war for aviation, according to a statement made in the Senate recently by Senator Hiram Bingham. E. P. Warner's knowledge of aviation design, engineering, and operation is too well known and too highly respected throughout the automotive industry to need any repeating here. He has flown a total of 4000 miles in every type of airplane and airship since becoming assistant secretary of the Navy for aviation. It is particularly saddening to see a man so peculiarly painstaking as regards accuracy of statement as is Warner, criticised by one so constantly loose in the same regard as is Brisbane. Assistant Secretary of Commerce McCracken qualified as a pilot many years ago and also served as an instructor during the war. If the men in charge of our aviation policies knew as little about flying as Brisbane apparently does about the true facts as regards the flying experience of these men, our aeronautical affairs would indeed be in a sad state.

* * *

Here's How to Deal With Rear-Seat Drivers

THE rear-seat driver problem has been solved at last. A British body builder has introduced a new type of sedan in which the rear seat is backed up against the front one so that it faces toward the rear. It is claimed that "passengers occupying the rear seat escape the distractions and nerve shocks which ordinarily spoil motoring for some people, and that they become entirely unconscious of the risks of the road and enjoy a peace of mind unknown to them in motoring before. Again, to the nervous it may be some comfort to reflect that in the case of a head-on collision they are not thrown forward through the glass." To give a better view of the fleeting landscape, windows are cut into the curving rear quarter panels of the body. The American railway observation car is said to have been the inspiration for the idea.

Why is a Salesman Like a Chorus Girl?

WITH all that has been said and written in the way of advice to retail automobile salesmen, the advice to get out and ask people to buy probably is the essence of wisdom. This oft repeated admonition was put in a new and striking manner the other day by F. E. Moscovics who said in a talk to Detroit automobile salesmen: "I was asked once by a magazine what was the qualification for a good salesman and I said 'the same as a chorus girl—two good legs.'" Both a chorus girl and a salesman probably need some other qualifications if they are to become stars but both are almost certain to achieve at least a reasonable success in their chosen vocation through the possession and use of that sole asset—two good legs.

* * *

Shop Equipment Exhibit a Success

IT seems pretty generally agreed that the first special shop equipment exhibit held in connection with a national automobile show turned out to be a real success. Exhibitors at the Grand Central Palace were particularly pleased with the character and quality of the attendance at the shop equipment booths during the trade hours on Monday and Tuesday, and it is possible that some means of increasing the length of the trade hours may be worked out for the future. The excellent results obtained at this first New York exhibition augurs well for the similar special shop equipment sections which are to be a part of the local automobile shows in many cities of the country this year. Service and maintenance work is taking its proper place.—N. G. S.

New Convertible Body Top Has Bead Fitting Into Rubber Channel

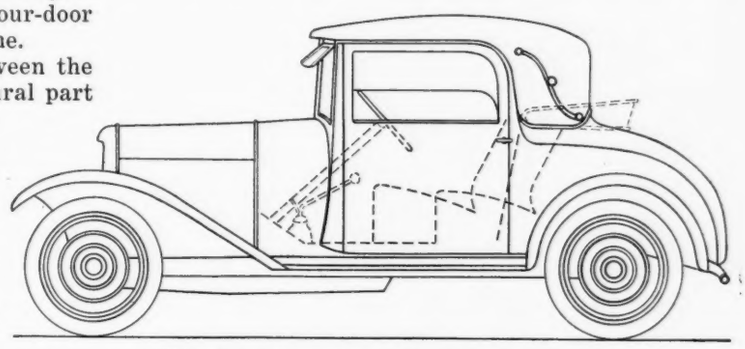
Tight joint thus formed between soft top-and-rear-quarter unit and structural part of body. Conversion easy.

A CONVERTIBLE type of body has been developed by Emile Alin of Paris, a well-known French body builder, who is represented in the United States by E. E. Lehwess, 341 W. 45th Street, New York. It is known as the Aerable monobloc type of body and permits of converting either a two-door or four-door closed car into an open car in a very short time.

The feature of the design is the joint between the soft top-and-rear-quarter unit and the structural part of the body. This unit is made of any of the well-known top materials and its edge is provided with a bead which is formed by folding the edge of the material around a fabric or other cord, as shown in the illustration. Around the edge of the structural part is run a rubber channel and when the top and rear quarter unit is in position its bead fills the groove in the rubber channel. The lips of the channel lie close to the fabric material and make a neat joint. When it is desired to take the top down and convert the vehicle into an open car it is only necessary to pull the bead out of the channel, which can be done with very little effort. At its joint with the windshield frame the top is fastened by a clip.

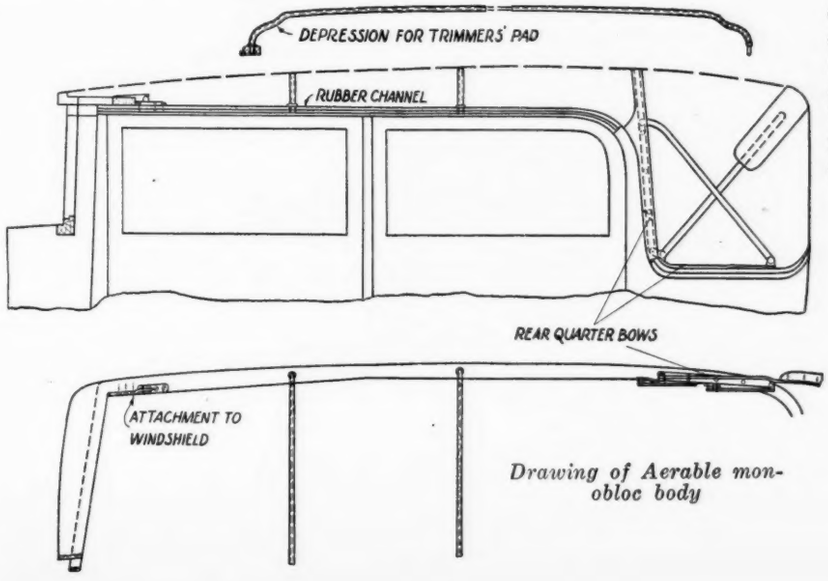
When the top is taken down the vehicle is an open type. The sides of the body remain permanently in position and give a windshield effect similar to that of the wings frequently fitted. This type of body construction is applicable to both the coupe and sedan types. When the top is down it is folded at the rear and inclosed in a cover provided for the purpose.

The Aerable monobloc body can be finished by painting in any color, in nitro-cellulose lacquer or in the natural finish of the top fabric. One of the advantages claimed for this type of body is its low cost of manufacture.



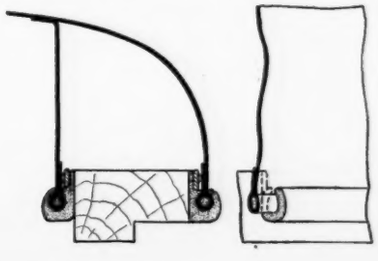
Side elevation of Aerable monobloc coupe

In France, where this body originated, it is being manufactured by the firm of Alinx & Liautard, well-known body builder, and photographs of several cars fitted with these bodies show them to possess attractive lines, both with the top up and with it down. This type of convertible body naturally is considerably lighter than the conventional closed body, and eliminating a considerable proportion of the weight in the super-structure, it lowers the center of gravity of the complete car and adds to its stability. Undoubtedly the soft roof with the rubber channel joint can be applied to other types of body design in addition to those illustrated.



Drawing of Aerable monobloc body

Sketch showing bead of top in rubber channel

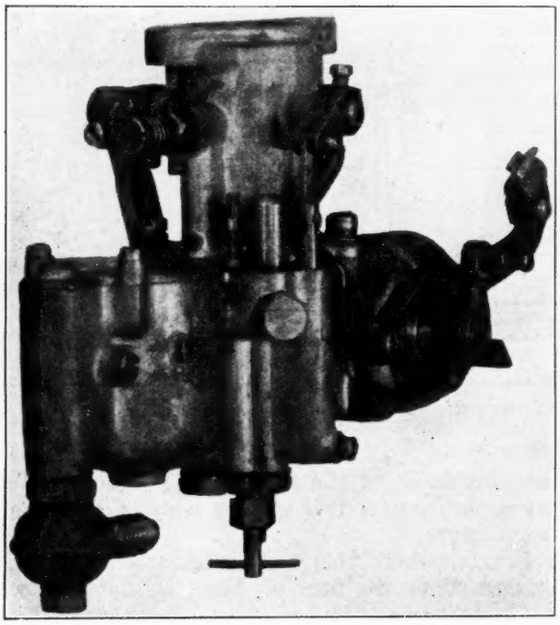


NEW DEVELOPMENTS—Automotive

Carburetor is Improved

A NUMBER of improvements have been made in the Tillotson carburetor, and the improved device is illustrated herewith. The body of the carburetor is a die casting, and the metering mechanism is the same as described in *Automotive Industries* of July 1, 1926. A separate accelerator well has been added, however, and the air-control economizer has been replaced by a fuel enrichment device which involves the use of a separate additional jet whenever the throttle is wide open.

In some models a change has been made to improve the choke action when the throttle is fully open. This



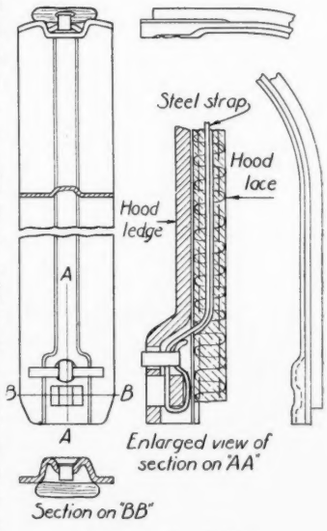
View of new Tillotson carburetor, showing connection from throttle to accelerator pump and also connection from choke to charge richening device

relates to a device connected to the choke lever and is a help in starting and warming up the engine. Both models of economizer are being used in production, and the accelerator fuel pump is available with both.

New Type of Hood Lace

WALKER GILMER, Tacony, Philadelphia, Pa., who for a number of years was connected with the L. H. Gilmer Co., has developed a new hood lace and method of attaching same to the hood ledges of the radiator shell and the cowl. It is of woven material, of double thickness, somewhat similar to a collapsed hose. However, the opposite sides are united in the weaving process in such a manner that a narrow opening extends through the center. A flat strip or wire of soft iron is either passed through this opening or woven in, and serves to fasten the lace to the ledge.

The ledge is formed with a groove or depression at the middle of its width, which is stamped in on the press when the radiator shell or cowl is produced. Usually two laces are used at each end of the hood, extending from the middle of the top of the radiator, for instance, down to each end. At the ends where the lace is fastened down there is a square depression in the ledge, the bottom of which is pierced and a loop formed to which the wire extending through the lace is anchored. At the top end, where the lace is secured first, the wire is allowed to extend a distance of perhaps 2 in. beyond the lace and the projecting portion is passed through the loop. The lace is then turned back into position on the ledge, covering the projecting end of the wire, which suffices to give a firm anchorage. At the opposite end a round hole is punched in the bottom of the depression, in addition to the loop, and after the end of the wire has been drawn through the loop by means of pliers and bent back, a clip is put over it, the ends are passed through the round hole and then bent back.



Details of Gilmer hood lace

A lace thus applied is securely held over its entire length, the flat wire lying in the groove, which is made of just sufficient width to accommodate it, and there can therefore be no transverse motion of the lace when the hood is opened or closed. When thus applied the lace is decidedly neater in appearance than when either riveted on or threaded through holes punched in the ledge, and we understand that it is also cheaper to apply. Moreover, there is no possibility of metal to metal contact between hood and ledge at any point.

At the present time nearly a score of manufacturers are trying out this lace experimentally. Mr. Gilmer plans to make arrangements whereby car manufacturers can get this new lace from their regular sources of supply.

"Spiral Drive" Turret Lathes

THE Bullard Machine Tool Co., Bridgeport, Conn., is announcing a new series of vertical turret lathes to be known as the "Spiral Drive" type. These supersede the previous "New Era" type and embody several recent improvements, including all-steel construction of the main slide and turret.

The latest improvement, from which the new series takes its name, is the adoption of spiral bevel gear drive for the table. This offers the advantages of smoother drive for the table and greater tooth strength for the same pitch. The new design provides a pinion amply supported in wide bearings on both sides, and a table gear of the largest permissible diameter, which is firmly built in as an integral part of the table-spindle-chuck unit. The familiar Bullard method of lubrication

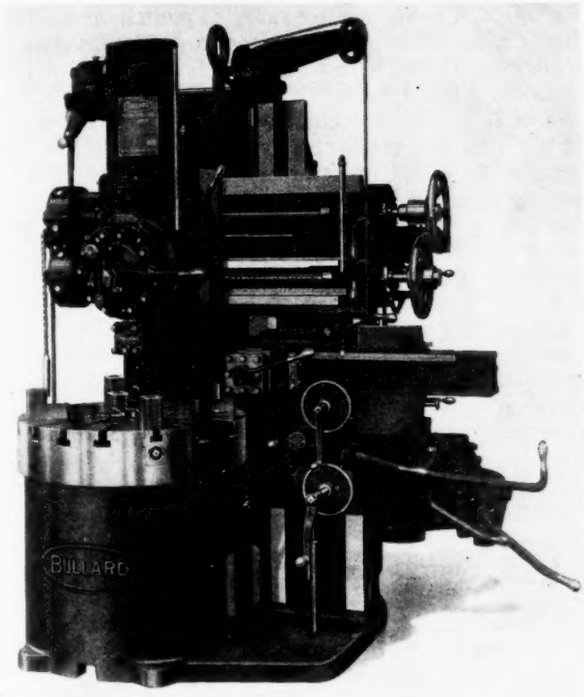
Parts, Accessories and Production Tools

provides a constant flow of oil at this point.

The new series includes all of the four sizes previously built—24, 36, 42 and 54 in., and, in addition, one larger size, to be known as the 64 in. The design of this new size in general follows the lines of the other four sizes. It has a clear swing of 66 in. diameter and a clearance in height of approximately 34 in. for the larger diameter swing under the crossrail, and 48 in. under the turret face. The new model is furnished with a plain table having parallel and radial T slots, and the standard equipment includes four independent face plate jaws with drop forged steel body, special alloy steel moving parts, and a differential actuating screw.

There are 12 changes in table speed, ranging from 2½ to 43 r.p.m., which are selectively obtained through two systems of sliding gears and controls that interlock with the clutch and brake.

Both main head and side head are provided with eight positive and independent changes of feed, and means for the adjustment and control are within easy



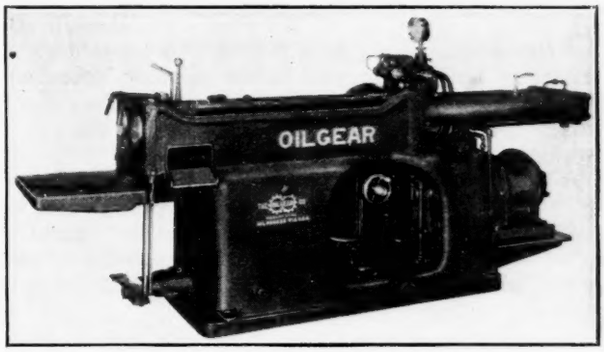
New Bullard Spiral Drive vertical turret lathe

reach of the operator when standing in the natural working position.

The new size of machine is particularly adaptable to large work requiring boring, turning and facing operations, permitting the effective use of both heads simultaneously. This machine has a net weight of approximately 28,000 lb. and the floor space occupies 10 ft. 6 in. square by 11 ft. high for full extended capacity.

High-Speed Broaching Machine

THE Oilgear Co. of Milwaukee, Wis., announces a double spindle broaching machine known as the Oilgear Twin Ten. In operation, while one spindle is on the



Oilgear Twin-Ten broaching machine

working stroke the other is on the return, which arrangement, in conjunction with the use of hydraulic operation, makes for high production.

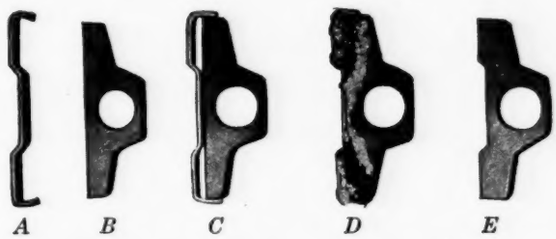
The normal pulling capacity of the machine is 10,000 lb., the peak capacity 12,000 lb. The stroke is adjustable from 6 to 36 in. and the speed from 48 to 360 in. per min. The net weight of the machine is 3000 lb. and the floor space required 32 by 120 in.

This new two-spindle machine is arranged for both hand and pedal control and is specially adapted for high-speed broaching on small and medium size parts. It is capable of making about 500 36-in. strokes or 900 18-in. strokes per hour.

Bronze-Tipping Steel Shims

WHERE steel shims are used for separating the bearing and its cap, it is a good plan to tip the inner edge of the shim with bronze, as this edge comes in contact with the revolving journal and must have bearing properties.

In applying the bronze tips by the oxy-acetylene torch, a steel mold is used which serves as a guide for the operator of the torch and reduces the amount of grinding necessary for the final finishing. The shim and mold are placed on a carbon block. In the first place the edge of the stamping is "tinned" with bronze, and then bronze welding metal is built on the edge until the mold is filled. A neutral flame is employed to prevent burning of the bronze. It is necessary to use good bronze flux, applied by dipping the heated end of the welding rod into it and adding such flux as adheres to the rod. Even though it is necessary to use the initial tinning to obtain a strong and solid bond between steel and bronze, the operation is said



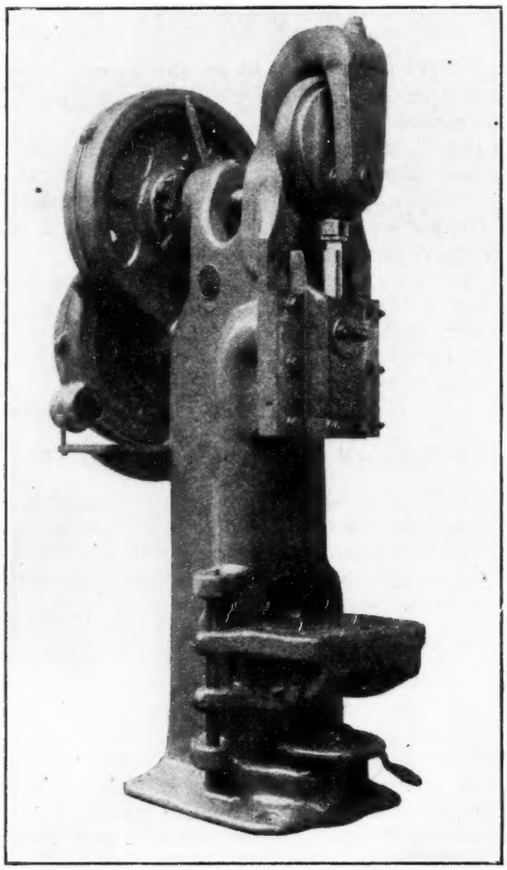
Steps in the process of bronze-tipping steel shims: A, steel mold; B, steel shim stamped; C, mold and shim assembled; D, bronze run into mold and brazed to steel shim; E, finished shim

to be remarkably rapid. The outer edge is built up slightly to give the shims the 1/32 in. overhang required by the specifications.

Ferracute Long-Stroke Press

A RECENT product of the Ferracute Machine Co., Bridgeton, N. J., is a long-stroke press designed primarily for certain automobile forming operations. The height of the adjustable bed from the floor can be varied from 25 to 33 in. and when not in use can be swung to one side.

A ram stroke of 12 in. is obtained by the use of an eccentric keyed to the shaft. A webbed flywheel and gear, both incased in guards, make for safe operation. A motor shelf is provided, the drive from motor to press being through a rawhide pinion which engages with teeth cut in the flywheel rim.

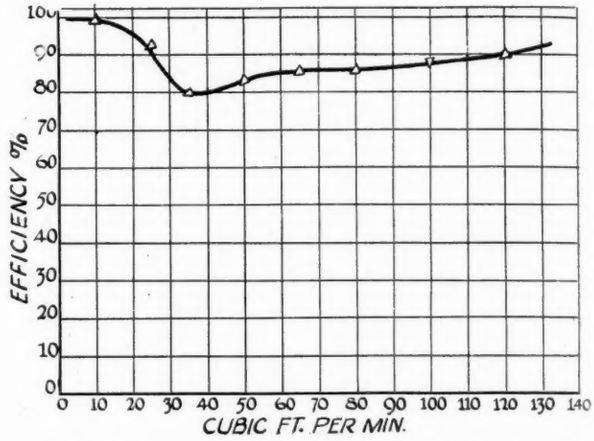


New Ferracute long-stroke press

Horning operations may also be performed with this machine with a horn assembled in the hole provided in the front of the frame. The press weighs about 15,300 lb.

Tillotson Air Cleaner

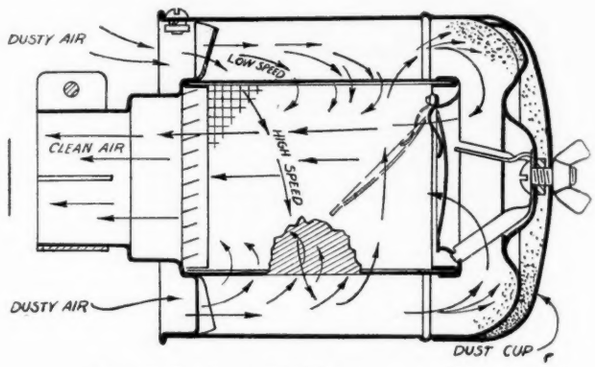
AN air cleaner which makes use of two of the principles employed in the design of devices of this kind has been developed by the Tillotson Carburetor Co., Toledo, Ohio. The centrifugal principle is widely used but is not very effective at low air speeds, as the centrifugal force on the dust particles is then small and unable to overcome the hold which the air has on these particles by reason of its viscosity. The filter type of air cleaner is particularly effective at low



Graph showing variation of efficiency of air cleaner with air speed

speeds. At high speeds the force on the dust particles as they strike the screen is so great that there is a tendency to draw the finer ones through the pores, and the efficiency of the filter decreases as the speed increases. Moreover, at high speeds the filter tends to cause an appreciable pressure drop, unless it is made in sizes which are impracticable for car engines.

In the Tillotson air cleaner, of which a sectional view is shown here, the air enters an annular chamber at one end through louvres and is given a swirling motion by helical flaps. Within this annular chamber is another cylindrical chamber, and at low air speeds the air can get from the former to the latter only through the pores or interstices of a fire-proof cloth filtering element held by the perforated wall of the inner chamber. This filtering element is so designed that it will take care of all the air consumed by the engine up to car speeds of somewhere between 20 and 30 m.p.h. In the head of the central chamber there is a large flap valve which is normally held closed by a spring, and when the car speed exceeds the figure given, the air pressure will open this valve and air can then enter the inner chamber without passing through the filtering element. The air speed is then



Sectional view of Tillotson air cleaner

sufficient to separate most of the dust by centrifugal action and the dust is thrown against the outer wall and carried to the end opposite the inlet, where it enters a dust chamber, between the head of the cleaner and a dust cap, through an opening in the former.

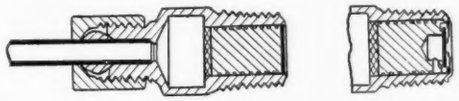
The filtering element is self-cleaning and all dust is carried into the cup. After unscrewing a wing nut, the dust cap can be removed and emptied of dust. The variation of the efficiency of this cleaner with the air speed is shown by the accompanying graph.

Ferguson Designs a *Central Chassis Lubrication* System

Comprises metering pump on dash with tubes leading to lubricators at all points on the chassis to be oiled.

A NEW system of chassis lubrication from a central point has been worked out by J. B. Ferguson, designer of the former Fergus car, and will be marketed by the Fer-Mas Co., Newark, N. J. It will be remembered that the Fergus car, which was first exhibited at the New York automobile show in 1916, had a chassis lubrication system of the central type, and Mr. Ferguson's experience in this field therefore dates far back.

The system comprises a metering pump mounted on the dash, lubricators at all points on the chassis to be oiled, and tube connections from the former to the latter. The lubricator is made of 7/16 in. hexagon hard brass rod and contains a filtering element 3/8 in. in diameter. In addition there is in the lubricator a smaller, fine-mesh screen, with a similar screen for mechanical protection on the outer end. A restriction in the oil



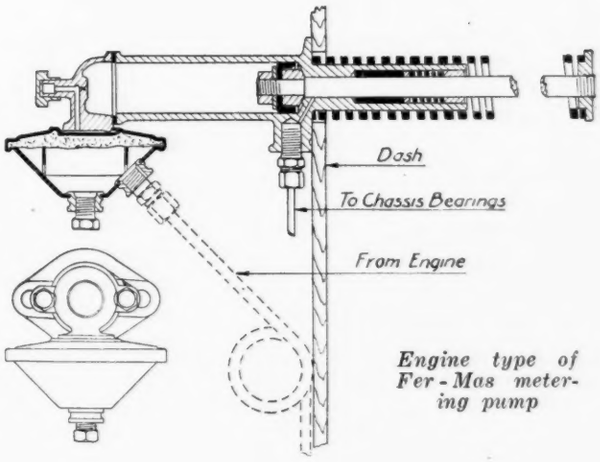
Lubricator shown in section (enlarged scale)

passage through the lubricator is formed by a helical groove several inches long, which is turned on the outside of a plug that is later pressed into the lubricator. The lubricator is provided with a simple valve at the outlet end. This is really required only if there is considerable difference of level between different points to be oiled, as the slow rate of feed of the system makes it unnecessary otherwise. The object of the valve is to prevent a leak in the system under certain conditions.

These lubricators are made in twelve different sizes, having approximate capacities ranging from one to 3600 drops per hour, of a medium automotive engine oil containing 56,000 drops to the gallon at room temperature, under a pressure of 100 lb. p. sq. in. Due to the retention of impurities in the oil, the resistance of the filtering element will increase in the course of time, but it is claimed that the increase in resistance will amount to no more than 10 per cent after a total of 10 gal. has been passed.

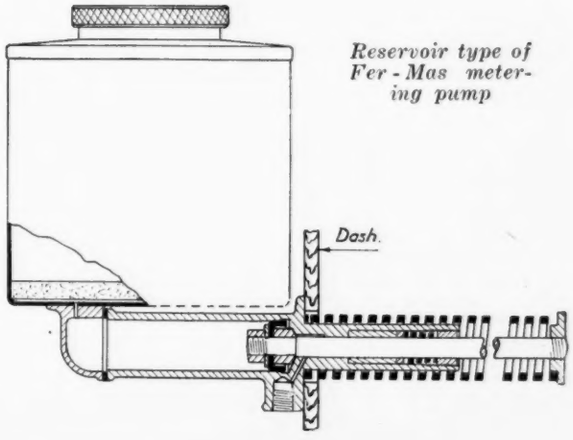
The metering pump is made in two forms, one combining a pump and filter, the other a pump and a reservoir incorporating a filter. With the former type of metering pump advantage is taken of the engine oil pressure to help feed oil to the chassis bearings. The operation of both pumps is the same.

When the plunger is pressed in, the leather cup allows the lubricant to pass, filling the space behind it. On releasing the plunger the leather cup traps the lubricant and forces it into the system under the pressure of the spring (plus the pressure on the engine oil in the case of the engine supply). The time it takes for the plunger to return to the beginning of the stroke depends upon the number of bearings to be oiled and upon the viscosity of the lubricant, which means that it varies with the atmospheric temperature. The manufacturers recommend that the system be so adjusted that the plunger will return in from 5 to 10 min. at 60 to 70 deg. atmospheric temperature. During the return stroke fresh lubricant slowly filters into the cylinder for the next charge, and at the end of the stroke the whole system is completely sealed, remaining so until a new supply is required.



Engine type of Fer-Mas metering pump

Distribution of the lubricant to the different bearings is effected through tubes of 1/8 in. outside diameter. A variety of fittings have been designed which permit of the application of the system to practically any chassis without structural changes.



Reservoir type of Fer-Mas metering pump

U. S. Exports of Cars, Trucks, Tires and Parts

COUNTRIES	GASOLINE PASSENGER CARS										TRUCKS					
	Up to $500		$500 to $800		$800 to $1200		$1200 to $2000		Over $2000		Up to 1 ton		1 to 2½ Tons		Over 2½ Tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Austria					4	$4,485										
Azores and Madeira Islands	7	$2,289									1	$353	1	$934		
Belgium	10	5,014	173	$128,602	296	317,645	20	$32,940	21	$58,989						
Bulgaria																
Czecho Slovakia			8	5,161	1	937			2	5,000						
Denmark	4	1,703	180	123,963	122	129,818	3	4,630	2	4,228			13	18,392		
Esthonia																
Finland			17	11,359	32	35,341	15	25,187	6	14,183	6	6,912	8	13,431		
France	12	5,827	3	2,252	11	11,708	4	6,515	19	55,414	4	1,846				
Germany	50	21,797	104	68,247	98	104,885	21	34,317	23	60,892			2	2,558		
Gibraltar	2	926	1	808												
Greece	7	3,767	19	13,139	13	13,545	1	1,679	1	2,888			1	763		
Hungary			10	6,365	3	3,293							1	1,330		
Iceland and Faroe Islands																
Italy	326	99,805			4	4,687			1	3,485	500	123,445				
Latvia													1	680		
Lithuania																
Malta, Goze and Cyprus Isls			3	2,092	1	963										
Netherlands			58	40,468	37	40,696	20	30,860	9	28,627	3	1,665	20	28,824		
Norway			27	20,521	21	21,948	15	24,508	2	9,858	9	7,188	15	17,133		
Poland and Danzig	3	1,606	2	1,470	4	4,688	1	1,858								
Portugal	104	52,825	23	17,204	40	44,712	4	6,688	5	12,397	18	8,585	1	1,615		
Rumania			6	4,932	2	1,924	1	1,903								
Russia							1	1,380							1	$5,613
Spain	67	32,773	172	127,556	258	267,184	71	114,959	42	113,442	161	75,133	21	22,582		
Sweden	4	2,167	117	82,412	66	68,601	18	28,759	10	27,011	7	5,151	41	46,300	4	6,686
Switzerland					7	7,260	10	16,389	10	24,538						
Turkey	17	7,655	24	16,792	10	9,333	3	4,074			9	4,215				
United Kingdom	354	166,912	748	365,302	115	121,211	24	43,526	49	125,041	33	22,520	115	133,187		
Irish Free State	27	10,620									6	3,562				
Yugoslavia			9	13,987	3	3,194										
United States																
British Honduras	2	500														
Canada	120	32,879	204	141,983	95	91,929	44	70,005	84	236,545	79	58,290	92	143,439	27	121,104
Costa Rica	1	533	14	9,517	12	12,960	1	1,276			3	2,391				
Guatemala			6	4,594	11	12,565	4	6,663	5	12,500	5	2,342	13	18,661		
Honduras	3	1,042	2	1,206	4	3,995					3	1,848	3	5,545	1	2,000
Nicaragua			4	2,775	11	11,832			1	3,500						
Panama	1	556	10	7,445	22	23,653	2	3,318	1	4,350	8	14,787				
Salvador			11	8,634	2	2,386	4	5,960	3	8,388			1	1,643	4	8,551
Mexico	188	59,126	123	84,592	90	91,834	21	32,318	22	66,728	117	75,908	37	64,524	13	27,397
Newfoundland	2	545	1	624	1	850	1	1,386								
Barbados			7	4,624	4	4,484										
Jamaica	19	7,728	32	20,573	9	10,071	2	2,650	1	2,500	13	4,506				
Trinidad and Tobago	1	454	5	3,717	2	1,989	1	1,455	1	2,750			1	1,707		
Other British West Indies	17	5,553	6	4,419	2	2,499	1	1,663			4	1,029				
Cuba	94	27,092	60	39,492	52	50,542	27	41,059	34	100,369	85	40,765	12	24,440	5	16,625
Dominican Republic	52	23,471	10	6,735	8	8,688	1	1,816	3	8,302	10	5,672	3	4,142		
Dutch West Indies	2	1,120	1	736	11	11,944			1	2,500	3	1,050				
French West Indies	2	685														
Haitian Republic			7	4,744	10	10,927					8	5,840				
Virgin Islands																
Argentina	2,097	950,347	402	298,802	721	728,725	112	176,264	44	116,654	10	11,424	28	50,238	43	131,068
Bolivia	9	4,518	8	5,946	11	12,800	5	9,143	2	5,623	3	2,550	2	2,398		
Brazil	420	159,001	352	253,475	206	200,737	61	94,145	27	71,633	146	43,217	6	6,664	1	2,714
Chile	150	40,181	44	30,629	59	60,424	8	11,624	10	38,301	6	5,089	21	42,131	2	5,309
Colombia	24	9,354	35	26,474	73	78,029	12	19,076	10	27,687	16	13,116	46	97,419	23	58,723
Ecuador	7	2,350	3	2,119	1	1,058	4	6,185								
British Guiana													2	2,151		
French Guiana																
Dutch Guiana	1	483														
Paraguay			10	5,752	2	2,148							4	3,891		
Peru	7	2,617	16	11,937	25	27,246	5	7,679	4	10,114	13	7,110	9	10,363	2	4,672
Uruguay	463	149,794	36	27,029	48	50,290	4	7,658	9	27,603	212	58,331	13	14,302	3	16,041
Venezuela	32	11,462	66	50,215	149	151,808	9	13,313	15	37,052	122	56,619	52	90,748	4	9,520
Aden	2	824			2	2,370										
British India	2	733	127	97,865	21	22,858	5	6,664	1	2,930	88	61,638	13	16,150		
Ceylon			4	3,109	15	14,655	1	1,494	1	3,200	12	11,228	16	22,959	1	1,612
British Malaya	60	32,822	42	31,257	15	12,765	6	9,312	1	2,285			2	3,220	1	2,730
China	65	24,106	109	77,467	17	18,404			3	7,798	112	51,220	18	18,472		
Java and Madura	5	2,577	101	71,292	29	30,807	1	1,952	3	6,961	25	14,581	8	7,916	1	5,872
Other Dutch East Indies			16	10,990	4	4,034			2	7,124	12	9,798	14	13,189	1	6,360
French Indo China	5	1,770									15	4,547				
Hejaz, Arabia and Iraq	10	3,744	6	4,569			1	1,490			12	5,348				
Hongkong			1	622	4	3,587										
Japan	5	2,391	92	66,439	68	72,158	1	2,000	10	29,214	23	11,522	4	19,362	12	74,273
Kwantung	16	6,016			1	850	2	3,758								
Palestine and Syria	20	7,080	13	8,883	14	13,763					24	9,893	1	1,337		
Persia	3	1,062	1	676							3	2,228				
Philippine Islands	245	99,526	57	42,116	52	55,708	22	32,263	10	25,417	123	40,875	15	19,595		
Siam	1	581	4	3,481									6	4,788		
Turkey					1	1,051										
Australia	3,068	1,246,673	2,195	1,478,233	1,345	1,405,404	73	113,651	63	136,531	197	109,286	143	189,284	19	52,269
New Zealand	213	101,396	222	162,748	165	168,065	7	10,304	6	14,660	55	27,329	77	72,196	3	10,096
British Oceania	3	1,479	2	1,285	6	5,967	1	1,339					1	973		
French Oceania					1	900										
Other Oceania																
Belgian Congo																
British West Africa			1	690			1	1,500			31	36,496	141	157,281		
British South Africa	91	44,789	445	315,491	447	453,039	19	29,798	2	6,795	15	11,565	37	50,839	3	8,833
British East Africa			46	31,639	8	8,292	1	1,993	3	8,259	45	24,161	23	30,063	1	1,996
Canary Islands	1	502	6	4,267	14	15,268	1	1,725					1	1,850		
Egypt	162	58,708	64	45,274	61	63,941	7	11,222	1	2,716	115	45,085			2	3,882
Algeria & Tunis											4	1,370				
Other French Africa																
Liberia			2	1,771	1	994	1	1,735			4	1,888				
Madagascar			3	2,554							31	10,346				
Morocco																
Portuguese East Africa			1	680	2	2,172							3	3,494		
Other Portuguese Africa	2	708			1	960					4	971				
Spanish Africa																
Total	8,687	$3,544,564	6,739	$4,574,818	5,083	$5,262,483	711	$1,127,028	585	$1,582,982	2,573	$1,163,834	1,108	$1,505,103	177	$583,946

for December, 1926 | Canadian Exports

ELECTRIC VEHICLES		PARTS	TIRES						PASSENGER CARS						TRUCKS		PARTS	COUNTRIES
			Casings		Inners		Solids		Up to $500		$500 to $1000		Over $1000					
No.	Value	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
		$66,649	167	$4,951	5	$25											$256	Austria
		780	52	488	28	51												Azores and Madeira Islands
		103,610	310	6,313	72	342			2	$760	10	$8,357					248	Belgium
		868	24	323	2	4												Bulgaria
		4,123	836	25,014	746	2,656	158	$7,408										Czecho Slovakia
		260,636	6,319	68,744	4,333	6,789	43	799			5	3,882	4	5,028			2,783	Denmark
		199	10	283	58	129												Esthonia
		25,631	164	3,564	135	419					3	1,519					51	Finland
		51,247	292	3,041	154	143					3	2,110						France
		162,391	7,133	133,120	4,508	13,187					5	3,440	14	20,818			2,114	Germany
		80											1	1,486				Gibraltar
		4,037	1,298	15,874	170	441	39	1,245										Greece
		1,802	46	803	13	43												Hungary
		462	61	990	165	320												Iceland and Faroe Islands
		23,803	44	440	20	40											34	Italy
		1,363	28	346	48	148												Latvia
			99	1,032	114	195												Lithuania
		423					6	121	1	493					4	1,290		Malta, Gozo and Cyprus Isl.
1	$2,294	54,488	2,422	44,923	2,708	6,844												Netherlands
		16,643	392	8,887	73	225	62	4,246	1	493	1	685						Norway
		772	685	8,166	50	68	25	982			1	944						Poland and Danzig
		13,429	1,036	14,242	600	1,346	2	80					1	1,185				Portugal
		7,515	617	8,205	592	1,213	4	132	38	16,260	13	7,589			24	9,324		Rumania
		920																Russia
		50,663	6,525	97,687	5,997	13,562	337	10,660			5	4,487	1	1,181			234	Spain
		65,176	3,516	49,777	1,778	13,894	38	1,304										Sweden
		18,150	774	15,923	588	2,374	44	2,772										Switzerland
		3,439	1	40														Turkey
3	7,500	325,342	13,123	177,545	3,249	7,315	1,682	53,619	24	10,440	264	189,834	146	181,854			56,753	United Kingdom
		2,403															1,113	Irish Free State
		8,807	230	2,527	160	245			9	3,946			1	1,486				Yugoslavia
									7	1,775	2	1,650					4,141	United States
		480	3	68	1	1			2	733								British Honduras
		1,538,480	472	11,563	1,011	2,351	69	2,231										Canada
		5,879	453	8,223	432	1,085			15	5,560	3	1,592			4	1,573		Costa Rica
		6,457	496	10,653	359	1,248	10	465			2	1,884	5	5,807				Guatemala
		4,008	56	1,731	31	93	44	2,302					1	1,223				Honduras
		1,241	97	1,593	111	264							3	3,876				Nicaragua
		13,335	922	13,005	1,547	2,356	68	2,187			3	2,779	6	7,055				Panama
		6,693	874	18,945	818	2,740	26	1,101										Salvador
8	10,792	242,355	8,834	103,860	4,571	9,374	96	2,502	34	12,372	3	2,636	2	2,360				Mexico
		569															1,681	Newfoundland
		6,128	16	139	10	13	2	51	11	3,820	5	3,424	3	3,784	2	788		Barbados
		16,396	126	2,056	72	301	135	3,044			10	7,787	1	1,156	6	2,360	61	Jamaica
		4,432	88	1,716	101	260			28	9,138	3	2,220	2	2,020	12	3,402	401	Trinidad and Tobago
		4,328	76	641	62	94	4	88	5	1,965	3	2,821						Other British West Indies
		56,847	5,387	57,641	3,877	6,840	910	26,289			2	1,849	1	1,163				Cuba
		14,221	991	13,929	537	2,097	61	2,671					2	2,311				Dominican Republic
		2,408	215	2,696	185	462			3	1,286								Dutch West Indies
		554																French West Indies
		4,078	286	4,503	262	681			1	406			1	1,156				Haitian Republic
		154	15	124	10	17												Virgin Islands
		364,780	23,610	264,887	10,548	17,584	701	20,548	552	267,326	102	71,265	34	41,444			97,346	Argentina
		8,255	82	1,625	73	215	8	254										Bolivia
		265,485	12,080	148,922	4,640	8,125	287	13,073			73	63,103	2	36,497			20,294	Brazil
		90,237	2,255	44,178	1,872	5,204	148	13,218	25	11,613	9	7,326	9	9,701			40	Chile
		84,411	1,393	28,098	2,521	8,375	21	1,382	3	1,274	10	8,731	6	8,007	4	1,573	257	Colombia
		3,576	83	1,029	131	294	12	385										Ecuador
		864	20	152	12	16	6	101	7	2,112	3	2,676	1	1,039				British Guiana
		24																French Guiana
		146																Dutch Guiana
		2,527	123	2,571	73	187			1	403	1	956						Paraguay
		48,272	2,848	53,507	1,911	7,948	34	972	1	402	4	3,372	5	6,160			140	Peru
		48,587	4,030	47,644	1,547	3,070	112	4,826	42	19,720	8	5,266	1	1,185			204	Uruguay
		73,896	1,764	28,720	1,706	5,254	9	230	5	2,374	6	5,853	2	2,311	1	289	181	Venezuela
		40																Aden
		66,028	5,293	62,666	1,273	1,915	250	8,195	320	125,780	129	100,256	6	7,181	166	49,284	29,274	British India
		13,842	444	8,840	155	370	149	3,736	11	4,738	34	24,632	2	2,078	18	5,799	2,875	Ceylon
		47,264	1,059	11,592	281	552	51	1,412	216	67,771	22	19,880	4	4,763	2	649	47,760	British Malaya
		31,531	3,069	34,784	1,733	2,792	199	4,300	24	9,400	42	36,448	9	13,731			68	China
		38,598	2,846	38,231	855	1,613	58	2,354	269	99,971	46	37,481	5	5,521	147	42,500	41,226	Java and Madura
		10,275	107	2,528	72	111												Other Dutch East Indies
		10	38	456	38	109												French Indo China
		5,474	731	6,012	522	843			24	11,838					10	3,932		Hejaz, Arabia and Iraq
		2,579							2	988	4	3,153						Hongkong
1	815	279,514	11,023	94,684	10,693	14,696	971	16,000	77	33,598	57	48,114	69	85,743			15,119	Japan
		9,715																Kwantung
		14,535	408	6,698	42	134												Palestine and Syria
		2,536	200	2,873	40	147	10	398										Persia
		60,098	6,071	69,676	6,764	16,928	253	7,273										Philippine Islands
		2,349													36	9,728	11,692	Siam
		4,721																Turkey
1	2,000	457,259	3,780	80,414	637	1,549	912	50,202	1,099	331,882			11	15,148	100	27,622	16,645	Australia
		105,918	622	8,804	247	486	79	4,025	483	165,329	46	29,931	3	3,864	153	51,222	58,022	New Zealand
		1,410	28	148	45	124			1	493					2	788		British Oceania
		818	6	290	7	47												French Oceania
									3	1,222							2,273	Other Oceania
		1,770															1,975	Belgian Congo
		30,660	389	6,342	305	1,098			4	1,729	14	8,521			34	10,497	936	British West Africa
1	1,925	128,367	1,361	22,667	480	1,479	33	1,243	14	5,004	48	30,396	1	1,491	22	7,882	1,985	British South Africa
		10,979	76	1,495	9	103	10	288	25	9,283	34	23,184			27	10,430	2,951	British East Africa
		3,385	518	8,771	129	341	130	5,698										Canary Islands
		12,607	345	3,381	562	928	65	2,030			3	1,615		11,502	10	3,932	6	Egypt
		34																Algeria and Tunis
					50	195												Other French Africa
		148	14	153														Liberia
		15,141																Madagascar
		231							1	493	1	549						Morocco
		723	100	1,462	165	395												Portuguese East Africa
		2,324	278	5,053	210	510												Other Portuguese Africa
		1,944	4	40	4	10												Spanish Africa
15	$25,326	$5,558,781	152,709	$2,045,727	90,715	$206,042	8,381	$288,626	3,390	$1,244,190	1,042	$784,197	404	$502,015	784	$244,864	$421,139	Total

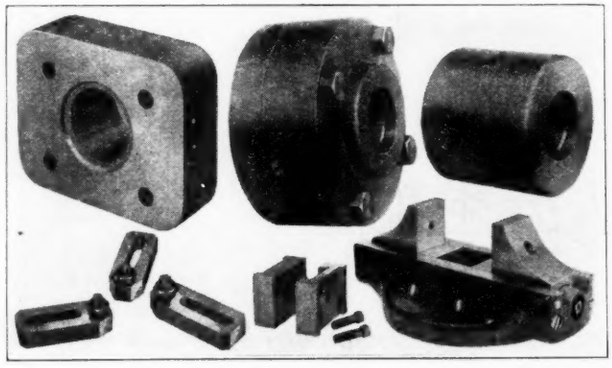
Adapter Plates Increase Usefulness of Flanged Lathe Tools

Tools may be adapted to universal hollow hexagon turret lathes by new Warner & Swasey developments.

ILLUSTRATED herewith are some recent additions to the Warner & Swasey line of turret lathe tools. Any of the flanged tools of the company's line, including the single and multiple cutter turners, may be adapted to the Universal Hollow Hexagon Turret lathes by the use of adapter plates. These adapter plates are tapped in such a manner as to make it possible to adapt the smaller tool flanges to the turret faces of the larger machines, the plates varying, however, with the tool and the size of the machine.

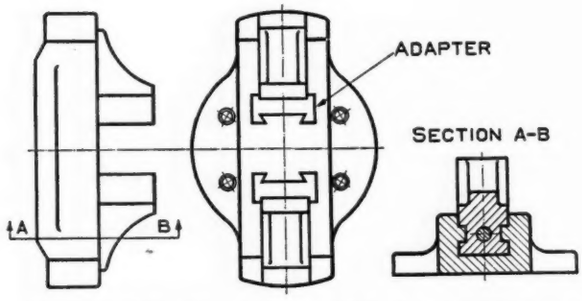
Both plain and adjustable types of adapter hood are available. Adapter hoods are made in standard sizes to screw on the spindle noses of the different machines, and are threaded to fit all styles of adapter. For ordinary work the plain type is recommended, while for very accurate work the adjustable type is preferable, this making it possible to align the adapter and the work after the work has been placed on the adapter.

A convenient means for locating work endwise in the chuck is provided by adjustable chuck back stops, which eliminate the necessity of making special jaws. The adjustment provided by adjustable chuck back stop screws is ordinarily of sufficient accuracy for first operations, if it is desired to use them as plain backing screws (Sketch 1). In second operations, or operations where extreme accuracy is required, a cut may be taken on the end of the screws, which are left soft for the purpose (Sketch 2). To locate the screws on varying radii, the back stops may be swiveled on the chuck face. Here they are held by either tapping into the faces of the chuck or by T bolts in the slots.

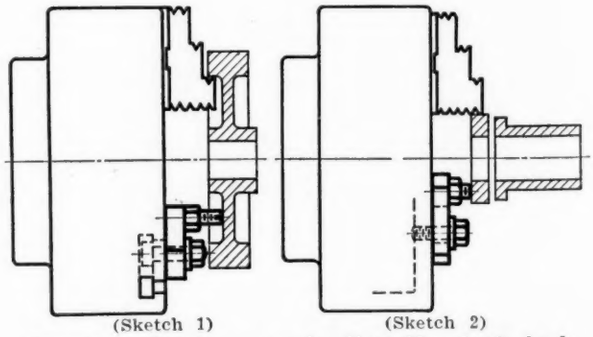


Upper left: Adapter plate. Upper right: Adjustable and plain adapter hoods. Lower left: Adjustable chuck back stops. Lower right: Box chuck and two styles of adapter

The box chuck, which gives more rigid support to the jaws in the body, is particularly adapted for holding work of awkward shape. Small work generally is difficult to hold accurately without the use of jaws that are fitted to the shape of the work. The box chuck is said to be well adapted to this type of work, because of its coarse pitch and double-ended screw, making it possible to open the jaws quickly for loading. The master jaws, which are made from forgings and fitted with bronze bushings, are deeply anchored in the box chuck body, as shown by section A-B of the drawing. Half nuts are eliminated, the jaws being tapped to receive the right and left-hand screw. Adapters fitting into the permanent jaws are provided for holding the work jaws. These are furnished in either the blank or dove-tail type. The flange of the chuck is recessed for face plates so as to fit the spindle of any machine.



Drawing showing adapters which fit the permanent jaws of the box chuck and hold the work jaws



(Sketch 1) (Sketch 2)

Drawings showing use of adjustable chuck back stops

EDITORIAL

Self-Cleaning Spark Plugs

ATTENTION was called to the subject of spark plug failures by a recent communication to the Department of Foreign and Domestic Commerce from Stockholm, Sweden, to the effect that a self-cleaning spark plug had been invented there.

It is hardly likely that any one thoroughly familiar with the situation was greatly impressed, as the need for such a plug at the present time is very questionable. However, a certain amount of curiosity was engendered by the report, and this could not be satisfied at the moment, as no details of construction were given. Such details have now come to hand, and show that the plug has a recess at the inner end, between the insulator and the shell, which is nearly closed at the bottom by an inward flange on the shell. There is only a very narrow gap between this flange and the insulator, except at a point directly above the spark point gap, where the flange is cut away. The current of gas into and out of the recess during the succeeding phases of the cycle is intended to blow away anything that may bridge the gap, and thus prevent interference with the operation of the plug.

It is rather doubtful whether sufficient gas velocity can be created in this way to overcome the adherence between, say, lubricating oil and the metal of the spark points. Still, the plug may be quite satisfactory in operation, as the trouble which it is specifically designed to cure is practically nonexistent.

Getting College-Trained Men

THE automobile industry still needs better contacts with colleges and universities which are training engineers, technical men and future automotive workers if it is to have available for the future the raw material necessary from which to build its next generation of employees. One trouble, at the present time, as Louis Ruthenberg pointed out at the annual S.A.E. meeting in Detroit, last week, is that the industry itself does not yet know what sort of material it really needs. That is one reason that work such as that done by the General Motors' technical college will be of value. Not only will it train a certain number of men, but it will help the industry to learn the type of man it can best use.

A vast amount of training always will be necessary after the young men are brought into the industry; their school training never can do more than prepare fertile ground upon which the seeds of experience may be expected to grow with reasonable certainty and rapidity. Some responsibility for industrial training, perhaps in some sort of organized way, always will be necessary on the part of individual manufacturers if the best man-power is to be made ready for carrying on the automotive industry in the future. Already, our industry is somewhat behind several other major industries in the handling of this situation.

Foreman training in particular is a problem which has had only more or less sporadic treatment in automotive circles. A few very competent and extensive jobs have been done in connection with training foremen in the automotive industry, as for instance, some of the work begun several years ago in Dayton, but for the most part efforts along this line have not been as consistent and intelligent as the importance of the problem would seem to require. Several very large companies right now are engaged in study of the foreman training problem and in the working out of constructive methods of future handling.

One point about foreman training past experience seems to prove rather definitely: successful foreman training cannot be achieved without the active interest and participation of important manufacturing executives; the task can't properly be left to outsiders or formulas.

Fuel Economy

A SOMEWHAT general feeling still exists in the industry that unusual fuel economy remains a minor rather than a major factor in design from a selling standpoint. "So long as gasoline remains as cheap as it is," the argument runs, "the average American car owner isn't going to get greatly excited about fuel economy."

Like all general statements, this one cannot properly be refuted nor affirmed categorically. True, most people seem to care more about many other factors than about fuel economy when buying an automobile, but it must be recognized also that the average number of miles per gallon of gasoline for American cars as a whole has increased steadily in the last decade. It might be argued that the public is getting greater fuel economy, all the time and that, for that reason, apparently does not talk much about it; if continued progress were not being made along this line, perhaps more would be heard on the subject.

Two thousand owners of a low-priced car, which in its advertising boasts particularly of its fuel economy, were asked recently to check their reasons for having bought this particular car. It is interesting and just a little surprising to learn that the desire for fuel economy stood second in the list of reasons for having bought.

AUTOMOTIVE NEWS SECTION INDUSTRIES
Philadelphia, Pennsylvania
Saturday, February 12, 1927

Higher Retail Sales Rate Speeds Factory Schedules

PHILADELPHIA, Feb. 12—Production is now increasing at the plants of most of the automobile companies and indications are that February will be a very satisfactory month, though not an unusually high one for the industry. The sales market is beginning to feel the stimulus of the new products exhibited at the local and national shows and heavy orders are being placed with the factories.

For companies exclusive of Ford, January production was approximately 57 per cent over December and 5 per cent under January, 1926. During the first half of the month output was at a rather slow rate due to the unavoidable delays incident to getting under way on new models. Progressive improvement has taken place since then.

The Chicago automobile show set a new attendance record, emulating in this respect the exhibits at New York and several of the other large eastern cities that have held their annual displays since the first of the year. The gratifying turnout at the shows has been excellent encouragement to the manufacturers as well as to the local men in the trade.

Truck production held up much better than passenger car output during the early winter and a profitable year is predicted by the manufacturers of commercial vehicles. Two major orders for buses by public utility interests are about to be placed.

Willys Looks Over Coast Plant Sites

SAN FRANCISCO, Feb. 9—Willys-Overland, Inc., contemplates establishing an assembly plant on the Pacific Slope, it developed here when John N. Willys, president, and a group of other Willys-Overland officials inspected a number of sites in this city. The plant, it was said, would be used for the assembly of Willys-Knight 70s and Whippets, and give employment to more than 500 persons.

Mr. Willys was accompanied on his visit by L. G. Peed, general sales manager; Orrin Kilburn, assistant to Mr. Peed, and R. C. Rowland, sales promotion manager.

Reo Has Record Orders

LANSING, Feb. 7—Reo Motor Car Co. reports unfilled orders for February to be larger than at any time in the history of the company. Total volume of sales since the opening of the New York show is more than $44,000,000, it was said. Departments of the plant are working on 24-hour schedules.

GMC Increases Dividend to $8

NEW YORK, Feb. 10—Directors of General Motors Corp. today increased the dividend rate on the common stock to $8 annually by declaring a dividend of $2 a share. Regular dividends on the preferred stock issues were also declared. The increase in the common stock rate had been looked to by well informed financial circles.

E. T. Strong, president of Buick Motor Co., was elected a vice-president of General Motors Corp., W. S. Carpenter, Jr., vice-president in charge of finance of E. I. duPont de Nemours & Co., Inc., was elected a director and member of the finance committee of General Motors, and W. A. Fisher, president of Fisher Body Corp., was made a vice-president and director of General Motors.

Preliminary figures on dealer sales to users in January totaled approximately 80,000 against 53,698 in January 1926. Sales to dealers by company divisions totaled approximately 100,000 against 76,332. A. P. Sloan, Jr., president, said the increase was due almost solely to increased business on Chevrolet and Pontiac cars. Exports are almost double the rate of the same period in 1926.

Auburn Nets $949,132

AUBURN, IND., Feb. 8—Net earnings of Auburn Automobile Co. for 1926 were $949,132, equivalent to $11.17 a share, and comparing with $755,685, or $8.89 a share, the year previous. Current assets on Dec. 31 totaled $4,714,571 against current liabilities of $838,172. Cash totaled $2,360,953.

Postal Receipts Increase

WASHINGTON, Feb. 9—Postal receipts of the 50 leading cities of the United States during January totaled $30,394,300, representing an increase of 4.39 per cent over January, 1926 receipts. The 1926 January receipts were in turn 6.77 per cent increase over January, 1925.

FORD SAYS TRADE "SOLID AS A ROCK"

WASHINGTON, Feb. 9—Business conditions in the United States are "highly satisfactory and as solid as a rock," Henry Ford today told President Coolidge during the course of a 20-minute chat between the automobile manufacturer and the President. Mr. Ford declared that his visit to the White House was merely to pay his respects.

Mr. Ford came to Washington to attend a dinner given the President and Mrs. Coolidge by Secretary of Interior Work. Among the other guests was Harvey S. Firestone.

Ford Loses Ground in January Sales

DETROIT, Feb. 10—Early year registration figures from a number of trade centers indicate a sharp decline in Ford business, a decline even more abrupt than many industry leaders had looked for. Here in Wayne County Ford sales in January fell to one-third the total reached in January last year and have been outstripped by both Chevrolet and Essex.

The situation is such that the industry sees the certainty of Ford being compelled to change his one model policy despite recent denials. Rumors are again in circulation here of a small Ford six by early fall. These are mainly based upon what the industry feels Ford will have to do rather than upon steps the company has yet taken.

A current report is that 15,000 men have been laid off in the Highland Park plant, this action coming at a time when practically every other factory in this district is adding men.

Ford High in New Zealand

LONDON, Feb. 2 (*by mail*)—During the first nine months of 1926 the total number of passenger cars sold in New Zealand was 13,257. Of these 4066 were Fords, 1009 Chevrolets, 883 Dodges, 749 Chryslers, 676 Buicks, 534 Essex, 476 Rugbys, 449 Overlands, 418 Studebakers, 352 Hudsons, 242 Hupmobiles, 219 Willys-Knights, 176 Oldsmobiles, 169 Nashs, and 165 Oaklands.

Morris led the British makes with 525; Fiat, the Italian, with 273; and Citroen, the French, with 91.

Auto-Lite Sales Gain

TOLEDO, Feb. 8—Sales of Electric Auto-Lite Co. in February will be larger than in November and December, C. O. Miniger, president reported.

British Industry Divides Interests

Will Reorganize Society Into Manufacturer, Dealer and Importer Sections

LONDON, Jan. 25 (*by mail*)—In view of the clashing of interests in the membership of the Society of Motor Manufacturers & Traders, it has been decided to form three sections, operating separately in their individual interests as British manufacturers, importers and wholesale dealers respectively, but represented equally upon the council of the society as an executive body. The latter will be responsible, as in the past, for the organization and control of exhibitions, for the general policy and good conduct of the industry, the consideration of automobile legislation, technical education and information, standardization, etc.

The first result of this specialization of the society is the appointment of a delegation on behalf of the British manufacturers' section to visit Australasia and South Africa to study automobile conditions there and the requirements and possibilities of those fields as markets for British automobile products. The delegation will leave England early in March, and will consist of Major Sir A. Boyd Carpenter (Member of Parliament for Coventry), Alan R. Fenn and Lieut. Col. A. Hacking (Secretary of the Society).

Chevrolet Makes Changes in Zone Sales Personnel

DETROIT, Feb. 8—The Chevrolet Motor Co. announces the opening of three new zone sales offices at Columbia, S. C., Salt Lake City, and Richmond, Va. This brings Chevrolet's sales offices to 37.

Coincident with the announcement many important changes in personnel were also made. H. L. Horton, assistant regional sales manager of the Atlantic Coast Region at Tarrytown, becomes regional sales manager at Tarrytown, succeeding D. E. Ralston, who becomes regional sales manager of the Middle West Region, with headquarters at St. Louis; E. W. Fuhr, regional sales manager at St. Louis, becomes Pacific Coast regional sales manager at Oakland, succeeding F. M. Coats, resigned; R. L. Meyers, assistant regional manager at St. Louis, becomes zone sales manager at New York City, succeeding G. H. Schmidt, who is transferred to the Atlantic Coast Regional office at Tarrytown to assist Mr. Horton; W. E. Holler, city sales manager at Los Angeles becomes assistant regional manager at St. Louis; L. M. Dreves, zone sales manager at Los Angeles, becomes zone sales manager at St. Louis, succeeding W. J. Burns, who becomes zone sales manager at Oakland; G. H. Wallace, zone sales manager at Oakland, assumes a similar position at Los Angeles; E. E. Jones, sales manager of associate zone at Richmond, Va., operating under the Baltimere zone office, now heads the new zone office at Richmond; C. G. Smith, zone sales manager at Little Rock, Ark., becomes zone sales manager at Memphis, replacing T. J. Burns, resigned.

Morris Purchases Wolseley Company

NEW YORK, Feb. 10—The purchase of Wolseley Motors, Ltd., by W. R. Morris, leading British manufacturer, was announced here today, Mr. Morris outbidding several well known American manufacturers who sought the Wolseley company as a British subsidiary. Mr. Morris in buying the property is understood to have been considerably influenced by his desire to keep the American companies out.

Under Morris plans as previously announced, the company will be continued as a separate entity, continuing to manufacture the Wolseley car which is in a different price class than the Morris.

A.C.F. and Harvester Arrange Sales Plans

NEW YORK, Feb. 10—Under an agreement reached between American Car & Foundry Motors Co. and International Harvester Co., salesmen of the former company will sell the I-H bus and its line of trucks to a restricted field, consisting of established rail operations and transportation companies. Parts for the A. C. F. buses and Hall-Scott engines will be carried in stock at the various branches of the Harvester company. Harvester also will use the Hall-Scott engine in several of its truck models.

American Chain Acquires Rubber Shock Insulator

NEW YORK, Feb. 7—American Chain Co. has acquired control of the Rubber Shock Insulator Co., which was headed by A. F. Masury, chief engineer of Mack Trucks, Inc. The Mack company has exclusive right to the design on commercial vehicles, the Rubber Shock Insulator Co. holding rights to passenger car installation for which it issued licenses. No manufacturing operations were carried on by the company.

Gillette Joins Agency

TOLEDO, Feb. 10—Leslie S. Gillette has been appointed eastern advertising representative of United States Advertising Corp., with supervision over automobile accounts in that territory. Mr. Gillette has been a member of the editorial staff of Chilton Class Journal Co. for the past five years, latterly as technical editor in Detroit territory. His headquarters will be in the Fisk Building, New York.

Business in Brief

Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Feb. 10—Definite improvement was noted in certain branches of trade last week, although the general level was still considered somewhat below that of a year ago. Commodity prices continued to decline and money rates tended toward greater ease, while the tone of the stock market was distinctly more cheerful than in recent weeks.

CHAIN STORE SALES

Chain store sales last month were generally larger than a year earlier, five leading systems reporting gains ranging from 6.7 to 50.7 per cent. Final returns to the Federal Reserve Board for December show that department and chain store sales during that month were larger than in any previous month, and that business during the year was larger than in any other year on record.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Feb. 2 were 13.3 per cent above the total for the preceding week and 5 per cent above that for the corresponding period last year.

FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 144 last week, as against 145 a week earlier and 145.9 four weeks earlier. Dun's wholesale price index reflected a decline of 1¼ per cent, and Bradstreet's a decline of 2 per cent, during January.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks increased $56,500,000 during the week ended Feb. 2, with gains of $28,100,000 in discounts, $27,200,000 in open market purchases and $1,100,000 in holdings of Government securities. Note circulation declined $2,000,000 and reserves $4,200,000, while deposits increased $52,900,000. The reserve ratio declined from 79.6 to 78.5 per cent.

During the same period, loans of reporting member banks increased $28,000,000, gains of $36,000,000 in loans secured by stocks and bonds and $6,000,000 in loans secured by Government obligations being partially offset by a decline of $14,000,000 in "all other" loans. Investments increased $20,000,000, borrowings from the Federal Reserve banks $26,000,000 and net demand deposits $93,000,000.

The call loan rate remained at 4 per cent throughout last week. Time loan rates were lower at 4¼ to 4½ per cent, as against 4⅜ to 4½ per cent a week earlier, and commercial paper rates likewise at 3¾ to 4¼ per cent, as against 4 to 4½ per cent.

Chevrolet Sales Set Chicago Mark

Record Dealer Attendances Scored—Grant Urges Need to Enter 1928 Clean

CHICAGO, Feb. 5—Chevrolet forces on duty at the Chicago show had sold 1320 cars up to 6 o'clock Friday evening, according to an announcement at the Great Lakes Chevrolet banquet and business meeting held last night at the Palmer House. While the show still had Friday night and Saturday to go the high total was sufficient to call for award of a cup to Harry Lewis, head of the Cook County dealer association, for ringing up the highest sales total at the national shows this year. The number of sales at New York by Chevrolet totaled 585, while last year's record at Chicago was 1227.

A record also is claimed for attendance at the Chicago meeting, the number of dealers present running from 1500 to 1600. A sales meeting at the Erlanger theatre in the afternoon drew more than 1800 dealers. Chevrolet leaders declare their Great Lakes convention was the largest gathering of its character ever held. It was the fifth of a series through which Chevrolet hopes to contact practically all dealers in the United States. There will be 21 meetings all told, the next three to be held at Minneapolis, Kansas City and Dallas.

Seeks 650,000 Sales in U. S.

The meetings are serving to organize Chevrolet dealers for a 1927 campaign in which it will be sought to sell 850,000 cars in the United States alone. A million sales is the company's world goal, Canadian and foreign trade being looked for to contribute 150,000 of the grand total.

R. H. Grant, vice-president and general sales manager, told the dealers that the campaign should be a "clean-up" not only as to new cars but as to used cars. He wants the effort worked out so the dealers will go into 1928 in good condition.

Cleveland Plants Equip for New Model Output

CLEVELAND, Feb. 7—Chandler, Peerless and Jordan having announced new models are answering, in unison, the question as to when production will begin on these models, with the statement, "next spring." Chandler is slowly getting into line on the new eight and it will require six weeks more to supply dealers. The plant is not disrupting production of its line of six-cylinder models to make the new eight.

Peerless refused orders for the new model at the Cleveland show with the announcement that deliveries could not be made until sometime in March. Jordan also is making plant changes for the new six slowly, and none of these models will be out until late in March.

CHICAGO REGISTERS PEAK SHOW CROWD

NEW YORK, Feb. 8—Paid attendance at the Chicago show was 30,800 more than last year and over 20,000 more than any previous Chicago show according to S. A. Miles, show manager of the National Automobile Chamber of Commerce. It was also larger than at any New York show except the one just closed.

Canada Sales Head Sees 1927 Increases

OSHAWA, ONT., Feb. 9—All divisions of General Motors of Canada, Ltd., are counting on increased production in 1927, states J. H. Beaton, general sales manager. "In spite of increased production for 1926, which eclipsed the previous year by 50 per cent, all General Motors divisions are counting on further increases in 1927, and on Chevrolet in particular we are planning a 60 per cent increase," Mr. Beaton said.

"Actual sales and interested prospects now are so far ahead of last year in numbers that confidence reigns at Chevrolet headquarters that this objective will be easily attained. If the 1927 Montreal show is a barometer of the prospects for the automotive industry for the coming year, motor car manufacturers may look forward with unbounded optimism."

Champion Capacity Now 50,000,000 Plugs a Year

TOLEDO, Feb. 7—The Champion Spark Plug Co. has completed a six-story addition to its plant which enlarges the annual production capacity to more than 50,000,000 spark plugs. During 1925 and 1926 the company spent $500,000 on new buildings. The company now has 100,000 sales outlets.

With the completion of the new plant addition comes an announcement from the Champion Porcelain Co. of Detroit, which makes all Champion cores, that this plant is now in position to make 1,000,000 cores a week.

R. A. Stranahan, president of the Champion Spark Plug Co., says that his company will increase its output to 75,000,000 spark plugs a year.

French Industry Down

WASHINGTON, Feb. 7—Automobile manufacturers in France experienced the usual seasonal depression, increased by the general unfavorable economic conditions, during the past month, according to advices received by the U. S. Department of Commerce. Factories are running on part time with numerous employees laid off. Hope is held for a return to normal conditions in the early spring, especially if currency is stabilized, which also would benefit American sales in France.

Studebaker Dealers Told of 200,000 Goal

Development of Erskine and New Merchandising Plans Mark Jubilee Year

CHICAGO, Feb. 5—Application of the "jubilee" spirit in the greatly enlarged merchandising program for 1927 was urged upon more than 1000 Studebaker dealers in messages by factory executives at the Congress Hotel this week. Paul G. Hoffman, vice-president of the corporation, declared that the goal of 200,000 Studebaker sales for this year should be attained. The Erskine, he said, will open an outlet which Studebaker has not previously cultivated.

J. M. Cleary, sales manager, urged dealers to take full advantage of the various merchandising helps the corporation offers. He expressed himself as especially pleased with the used car situation which has shown great improvement as a result of the corporation's "Pledge" policy. Mr. Cleary stressed the importance of the new sales course now going into the mails and said it is the corporation's intention to do all possible to help dealers develop service departments that not only will be profitable in themselves but which will produce new car sales.

H. S. Vance, vice-president in charge of production, told of the reorganization and strengthening of the engineering department, while Dr. C. A. Lippincott, manager of the cooperative department, explained the many benefits that accrue to members of the organization through this division's efforts.

Olds to Provide Dealers With Accounting System

CHICAGO, Feb. 5—Approximately 500 Oldsmobile dealers from the middle west attended the Chicago show sales meeting of the Olds Motor Works today. Besides helping dealers in solving their sales problems the Olds Motor Works are making available for dealers a comprehensive auditing system. Dealers desiring this service will be assisted by expert auditors who will install it and later will keep in contact with dealers, declared D. E. Eddins, sales manager.

President I. J. Reuter outlined the growth of the company and C. F. Kettering, president of General Motors Research Corp., told of progress that is being made in the engineering field.

Peru Dealers Organize

WASHINGTON, Feb. 5—An association of automobile dealers is being formed in Peru, with 18 leading importers signed as members, it was announced here this week through the U. S. Department of Commerce. The association is attempting to work out a uniform credit term. An office will be opened at Lima at an early date.

Uniform Law Urged on Driver Licenses

Hoover Sends Recommendations to All State Commissioners as Part of Program

WASHINGTON, Feb. 9—A uniform law, relating to motor vehicle operators' licenses, is urged by Secretary of Commerce Hoover, in a letter just sent out to all of the state commissioners of motor vehicles, as part of the Highway Safety Conference's program for a reduction of automobile accidents.

Secretary Hoover would also make it more convenient for the automobile operator to get his examination and permit by authorizing sheriffs, chiefs of police, town marshals, and other designated persons to make examinations. A reputable garage owner or dealer in every city, town and hamlet, he points out, could be deputized to do this, thus saving a vast amount of time and expense to operators. A higher standard for qualification, he also believes, would be maintained throughout all the states.

Dealer Right Secondary to Trustee, Says Court

WASHINGTON, Feb. 8.—A trustee's title, in bankruptcy proceedings, is paramount to that of a vender, under a conditional bill of sale, according to a decision rendered by the District Circuit Court of Washington state and just reported to the U. S. Department of Justice at Washington.

The case arose when the McCoy Auto Co. exercising its rights under the conditional bill of sale, seized two trucks from the purchaser who had gone into bankruptcy. At the time of the taking the trucks were in the physical possession of the trustee.

In the lower court it was held that the McCoy company having complied with the laws in connection with the registration of its bill of sale, had a right to the possession of the trucks. The decision of the circuit court denies this, holding that the trustee's right is paramount, "by virtue of the fact that the trustee's possession is the constructive possession of the court, the trustee being a court officer."

Disapproves Insurance Law

BALTIMORE, Feb. 10—The board of directors of the Baltimore Association of Commerce has disapproved the compulsory automobile insurance bill now before the Legislature. This action follows a report by the legislative committee of the association which suggested that Maryland wait until the scheme was tried out elsewhere.

The association, it was announced, would support more rigid discipline of drivers, stiffer fines and suspension of permits.

EXCISE TAXES DROP $30,355,267 IN 1926

WASHINGTON, Feb. 9—Net federal revenues collected as excise taxes in 1926 were $30,355,267 less than the amount collected in 1925, the Bureau of Internal Revenue announced this week. The reduction, the bureau states, was due primarily to the elimination on March 29, 1926 of the tax on trucks, parts, tires, etc., and reduction from 5 to 3 per cent on passenger cars. Of the total tax reduction $23,063,748 was due to reduction of these items, the 1925 total being $111,984,828, compared with $88,920,180 in 1926.

Says Plants Abroad Hit Glass Industry

WASHINGTON, Feb. 5—The American plate glass industry, 53 per cent of whose product is used in the automobile and body-building industries, is on the brink of destruction, Senator David A. Reed of Pennsylvania told the Senate committee investigating the Tariff Commission, which in turn is investigating the plate glass industry.

Domestic glass manufacturers are being ruined by foreign competition, the senator told the committee. He declared that foreign manufacturers are conducting a systematic drive in this country to control the domestic markets, and were selling their product in American markets below the domestic cost of production.

The Senate ordered the Tariff Commission to initiate the investigation of the plate glass industry more than two years ago and has failed to make any progress, the Senate committee was told. Senator Reed urged that the investigation be taken out of the Tariff Commission's hands and conducted by the State Department through the consul offices of that department.

378 Machine Tool Makers

WASHINGTON, Feb. 8—A census of manufacturers, engaged primarily in manufacture of metal-working machinery, just announced by the Census Bureau, shows that there were in 1925 a total of 378 such establishments, employing 36,000 workers and producing $175,000,000 worth of machines, such as lathes, grinding machines, drilling machines, etc., a large part of which is used in the automobile and accessory manufacturing industries.

Say British Dealers Gain

LONDON, Jan. 26 (*by mail*)—Ninety exhibitors are showing cars at the Sydney motor show, and of these 33 are British. The tendency on the part of dealers to change agencies from foreign to British cars continues. One firm, hitherto interested in the Fiat in this state, has now taken over Standard, Clyno and Hillman representation.

House Holds Rider in Tax Refund Bill

Deadlocked With Senate on Question of Consumer-Manufacturer Rights

WASHINGTON, Feb. 10—By a vote of 187 to 1 the House this week voted to stand back of its former action in "tying strings" to the $29,000,000 tax refund of illegally collected taxes from accessory and automobile manufacturers, which the Senate had eliminated from the urgent deficiency bill.

The measure, authorizing the refund, passed the House two weeks ago. A rider amendment was placed on the measure providing that the manufacturers must give bond to insure that the taxes would be rebated by them to the ultimate consumer. The rider was stricken out in the Senate and the bill passed, authorizing the refund, was sent to the Senate-House conferees.

After a six-day disagreement, conferees of the House reported back to that body, as did the conferees of the Senate, that they were hopelessly deadlocked.

In announcing its decision to stand pat on the rider amendment, the automobile and accessory industries were charged by Representative Garner, of Texas, with attempting a wholesale raid on the Treasury to pocket the entire sum, estimated to be $29,000,000.

"They are not entitled to it," he declared. "The automobile manufacturers are not here with clean hands. This amendment had hardly been passed when the automobile manufacturers rushed down here with their counsel. They invaded me by wholesale, asking that we see the error of our way. Gentlemen of the House, I hope that the House will stand by the House provisions we have put in here by unanimous vote for the rider," he declared, just prior to the 187 to 1 vote for the rider.

He told members of the House that the committee knew, when the rider was attached, that the manufacturers, under its provisions, "could never collect a cent of it and that's the very purpose of the amendment. They are not entitled to it. Neither is the Treasury under the court's decision declaring these taxes illegal, but between the two, the Treasury has a better claim on it than these manufacturers, who never paid it themselves, but who collected it from the ultimate consumer."

Ohio Tax Nets $13,243,503

COLUMBUS, Feb. 5—Total receipts from the two-cent gasoline tax in Ohio during 1926 were $13,243,503.68. The law was not effective during the whole of 1925 and no comparison can be made. The money goes to the Ohio Highway Commission and to the various municipalities and counties for use exclusively for road and street maintenance.

Men of the Industry and What They Are Doing

Cadillac Gives Rewards as Service Recognition

More than 650 employees of Cadillac Motor Car Co. were guests of the company at a dinner in the General Motors Building, Feb. 5, to all employed by the company for five years or more.

Mayor John W. Smith, Lawrence P. Fisher, president, and Albert U. Widman, works manager, addressed the employees. Watch fobs were presented to men who had been with the company five to 10 years while rings were given to the women who had served a like period. For those serving five years the emblems were of silver, while gold rewards were given to the 10-year workers.

Of the 1908 employees 676 have been with the company more than 10 years, 236 for more than 15 years, 63 for more than 20 years, five for more than 25 years, and two more than 30 years.

Roehm Elected Chairman

George E. Roehm, president of the Motors Metal Mfg. Co., has been elected chairman of the board and is succeeded as president by Robert R. McMath, who previously was vice-president and general manager. George D. Shanahan, assistant general manager, is promoted to the position of general manager. Nelson C. Johnson was reelected secretary and treasurer and Ferris B. Fick was reelected general sales manager.

Warner Heads 500 Club

Frank Warner was elected president of the 500 Club at its meeting in Chicago during show week, William L. Hughson, Albert Champion and Harry Fields, vice-presidents; Walter Buettner, treasurer, and Gregory Flynn, secretary. The meeting was attended by 255 members. The 500 Club, which to the unitiated might sound somewhat like a pinochle organization, was formerly the Old Timers Club, the G. A. R. of the automotive industry.

Wood Heads Colonial Sales

Lawrence Wood has been appointed general sales manager of Colonial Steel Co., Pittsburgh, following service with the company since 1912 when he joined the sales department. Recently he has served successively as district sales manager in Pittsburgh, in Detroit, and as assistant sales manager.

Curtiss Names Diefendorf

C. E. Diefendorf, vice-president of the Marine Trust Co., Buffalo, has been elected a director of Curtiss Aeroplane & Motor Co., Inc., suceeding A. A. Schlesinger, resigned.

La France Elects Rose

C. B. Rose has been elected executive vice-president of the American-La France Fire Engine Co.

BAUER ENTERTAINS SWEDISH EXECUTIVE

A. S. W. Odelberg, vice-president of the Royal Automobile Club of Sweden, who is visiting in this country, was entertained at a luncheon arranged by George F. Bauer, secretary of the foreign trade committee of the National Automobile Chamber of Commerce, in New York.

Mr. Odelberg, who has been an advocate of better roads in Sweden for many years, discussed the progress made in this direction. His message was considered to have special interest at this time on account of the impending visit of automobile executives who will attend the International Chamber of Commerce meeting in Stockholm on June 27.

Webster to Visit Hawaii

William M. Webster, commissioner of the Automotive Equipment Association, has left for the Pacific coast, where he will join a party from among the membership of the Chicago Athletic Association on a cruise to Honolulu.

Bonow Export Manager

M. A. Bonow has been appointed export manager of the Cooper Corp., Cincinnati. Mr. Bonow has been engaged in export activities for 20 years and has lived and traveled extensively in Europe and Latin America.

Bunting Visits South America

C. E. Bunting, secretary and treasurer of the Bunting Brass & Bronze Co., has sailed for South America where he will make a first-hand study of markets there for products of his company.

Fisher Joins India

A. C. Fisher has joined the India Tire & Rubber Co. organization as manager of the accessories and repair materials sales after a good many years of service with Goodyear Tire & Rubber Co., where he was manager of accessories and tire chain sales.

Grainger Back at Desk

G. A. Grainger, sales manager of the American Hammered Piston Ring Co., who has been seriously ill for several months, has recovered and is back at his desk.

Moffatt Joins Falcon

The Falcon Motors Corp. has named W. S. Moffatt, comptroller. He was affiliated with Willys-Overland for 11 years and during the past four years served as manager of branch operations.

General Motors Export Makes Personnel Changes

R. R. Schrenkeisen has joined General Motors Export Co., specializing in sales development of Chevrolet, Oakland and Pontiac. Mr. Schrenkeisen was formerly managing editor of *Motor World Wholesale* and director of advertising and sales development for H. L. Stratton, Inc.

W. T. Russell, formerly of the engineering department of Chevrolet Motor Co., has joined the general manufacturing division. J. G. Harrigan, formerly of General Motors Truck Co., and F. B. Trapp, formerly of Packard Motor Car Co., have joined the company's staff. W. C. Hulbert sailed this week to be GMAC representative at N. V. General Motors of Java, and P. E. Smith to be GMAC representative at the Japan plant.

F. L. Valiant, formerly with Flint Motor Co., has joined the sales department to take charge of Buick, Oldsmobile and Cadillac sales promotion.

R. K. Evans has been made regional director for Europe succeeding H. G. Zimmerman who becomes managing director of General Motors G.m.b.H. in Berlin. W. D. Sullivan, vice-president, is on a trip to the Hawaiian Islands. L. M. Rumely, general manager, is sailing Feb. 17 for Australia.

Hyatt Names Executives

H. O. K. Meister has been appointed general sales manager of Hyatt Roller Bearing Co., and A. W. Scarratt has been named chief engineer, according to announcement by H. J. Forsythe, president. Mr. Meister has been with the company 14 years, first as an engineer in the home office, later supervisor of sales in western territory, and for the past 18 months assistant sales manager. Mr. Scarratt joined recently as assistant chief engineer.

Kelsey of Canada Elects

The Kelsey Wheel Co., Ltd., of Canada, has announced the election of Malcolm G. Campbell president, succeeding the late John Kelsey of Detroit. Other officers of the company are W. H. Ducharme, vice-president; B. J. Fox, secretary-treasurer; Oscar E. Fleming, L. C. Brooks and George W. Kennedy, directors.

Morse Visits Export Trade

E. C. Morse, director of export sales of the Chrysler Sales Corp., is now in Europe, where, with S. D. Briggs, European director for the company, he will visit dealers in practically every large city and then visit South America.

Brown on Chandler Board

Percy W. Brown, Cleveland partner of Hornblower & Weeks, has become a director of Chandler-Cleveland Motors Corp., succeeding J. A. Fayne, resigned.

Expansion of Ford Shown by Earnings

Total of $76,775,366 in 1919 Disclosed in Records—Made $258 a Car in 1909

NEW YORK, Feb. 7—Figures on the financial affairs of Ford Motor Co. which have become available through testimony in the tax case now being heard, show 1919 with earnings of $76,775,366 to have been the high record year of the company up to that time. Dividends of $24,175,386 were paid in that year, also setting a record. Profits per car ranging as high as $258 were also shown.

Perhaps the most striking feature of the figures is the entire lack of relation between earnings and dividends practically from the outset. This is explained to considerable extent by the fact that most of the earnings of the company were put into expansions, all of its growth being paid for from current earnings. The objection of the Dodge brothers, sustained by a later court decision, to carrying this policy to alleged extremes, was primarily responsible for the determination of Henry Ford to buy up all outstanding stock.

Earnings and dividends from 1904 to 1919 were as follows:

Years	Earnings	Dividends
April 1, 1904.....	$82,017	.....
Sept. 30, 1904.....	201,019	.....
Sept. 30, 1905.....	285,231	.....
Sept. 30, 1906.....	107,360	.....
Sept. 30, 1907.....	1,011,826	$100,000
Sept. 30, 1908.....	1,251,097	600,000
Sept. 30, 1909.....	2,686,134	1,800,000
Sept. 30, 1910.....	4,452,609	2,000,000
Sept. 30, 1911.....	6,226,372	3,005,000
Sept. 30, 1912.....	13,056,452	5,200,000
Sept. 30, 1913.....	24,714,078	11,200,000
Sept. 30, 1914.....	29,764,500	12,200,000
July 31, 1915 10 mos.	24,519,541	16,200,000
July 31, 1916.....	59,017,892	3,200,000
July 31, 1917.....	27,843,999	9,200,000
July 31, 1918.....	51,837,821	5,200,000
June 30, 1919 11 mos.	52,094,241	24,175,385
July 31, 1919.....	76,775,366	.....

Profit and price per car from 1908 to 1913 were as follows:

	Dividend	Profit per car	Price per car
1908	25.3	$195	$773
1909	30.3	258	806
1910	24.4	215	880
1911	26.7	187	693
1912	29.7	180	605
1913	29.1	170	583

Tin Consumption Census Shows 117,406 Tons Used

WASHINGTON, Feb. 9—Tin consumption in the United States during 1925 totaled 117,406 tons, of which 15.7 per cent was used in the automobile industry, according to census figures just announced by the Bureau of Mines. Of the total consumption 76,640 tons were imported and 27,632 tons reclaimed. Production of tin in the U. S. is almost nil and the difference between the imports and reclaimed tin and the amount used is accounted as consumers' stock, estimated on Jan. 1, 1926, as being 13,134 tons.

Babbitt consumption showed a material increase, being 11,949 tons over the last census of 1917, and is attributed primarily to increased use by the automotive industry, the bureau states.

Budd Sees Early Start of Normal Manufacturing

PHILADELPHIA, Feb. 7—Passing of the dividend on the common stock of the Edward G. Budd Mfg. Co. was due to unusual expenses incurred by the company in rearrangement of production equipment and to the slowing down in the automotive industry in the last half of 1926 which left the company with an inventory of approximately $5,000,000 more than a year ago, E. G. Budd, president, said in a letter to stockholders.

Mr. Budd said he expected that business would soon resume as to volume and that contracts now on the company's books would be filled profitably. Earnings before the end of the year are expected to justify payment of the regular annual dividend for 1927. A $3,000,000 contract for bodies has just been closed with one of the large automobile manufacturers, deliveries to begin May 1, he declared.

Ford Incloses Cockpit in New Design Planes

DETROIT, Feb. 7—Six three-motored Stout monoplanes completed at the airplane factory of the Ford Motor Co. have a closed pilot's cockpit and an upholstered, heated cabin for 10 passengers. W. B. Stout, designer, talking of the inclosed pilot cockpit said it had taken several years to educate pilots that they could fly planes without sticking their noses out into the wind. With vision in all directions, pilots will swear by instead of at the inclosed type, Mr. Stout said. The airplane plant is now employing 160 men.

Thompson G.M. Counsel

NEW YORK, Feb. 7—Arrangements have been completed between General Motors Export Co. and the J. Walter Thompson Advertising Agency of London, by which the latter company will act as advertising counsel for General Motors in the British Isles, the continent of Europe, and in the Near East. Thompson offices will be established in each city where General Motors has an overseas assembly plant.

Aviation Directory Ready

WASHINGTON, Feb. 7—The U. S. Department of Commerce has prepared a trade directory of aviation covering manufacturers of planes and equipment, flying schools and aviation organizations, and containing a classified list of operators and pilots.

Detroit Interests Form New Bank

Underwriting of Motor Projects Seen Important Activity of New Institution

DETROIT, Feb. 9—Development of the Guardian Bank here by interests closely allied with leading automotive companies is regarded as an indication that the underwriting of motor issues will not be so exclusively a Wall Street function as it has been formerly.

The new institution will be organized as a commercial and savings bank, a trust company and a securities company under unified ownership. Announcement of the new company was made by William Robert Wilson, president of the Guardian Trust Co., who is chairman of the organization committee.

The aggregate invested capital and surplus of the new company will approximate $12,500,000. Substantially all of the stock of the Guardian Trust Co. has been acquired. Each unit of the new bank will have its own officers and staff and will be coordinated through a common chairman and interrelated directories.

The financing arrangements include issuance of 50,000 shares of the bank stock, 50,000 shares of the securities company stock and 10,000 shares of the trust company stock. Capital of the bank will be $5,000,000 and surplus $3,000,000. Capital and surplus of the securities company will be $1,000,000 to which will be added the capital, surplus and undivided profits of the Guardian Trust Co., a combined total of approximately $12,500,000.

Among the automobile men interested in the new project are W. O. Briggs, Roy D. Chapin, H. E. Coffin, Fred J. Fisher, Edsel Ford, Alvan Macauley, Louis Mendelssohn and C. S. Mott.

Central Alloy at Capacity

CANTON, OHIO, Feb. 7—All units of the Central Alloy Steel Corp. in Canton and Massillon will operate at full capacity, effective this week, with resumption of operations at the south division, according to C. E. Stuart, president of the corporation.

"The outlook in the steel industry is promising at this time," said Mr. Stuart. "The volume of business is increasing rapidly, although January was slow and business did not pick up quite as rapidly as had been expected. Reports from the Chicago automobile show have been very encouraging."

Sparks Buys Earl Plant

JACKSON, Feb. 7—The Sparks Withington Co. has purchased the former Earl Motor Co. plant No. 1 and will utilize the building for the manufacture of radio receiving sets. The building comprises 140,000 sq. ft.

Standards Adopted on Four New Items

Basis for Simplified Practice Determined at Department of Commerce Meeting

DETROIT, Feb. 5.—At a general conference held here this week under the joint auspices of the National Committee on Metals Utilization and the Division of Simplified Practice of the Department of Commerce, four Society of Automotive Engineers' standards were approved as the basis of simplified practice effort in their respective fields. These four are the standards for spark plug sizes, brake linings, taper roller bearings and piston and piston ring oversizes.

This conference was the outgrowth of preliminary meetings held in 1924 at which the opinion was that the Society of Automotive Engineers' standards were the most suitable in these four fields. These standards are revised from time to time and in the past two years the standards department of the society has made careful surveys to assure stability.

While the attendance was not up to expectations, the opinion of the latest conference was that these standards are satisfactory and that further steps toward their incorporation in the elimination of waste and simplified practice series of the Department of Commerce should be taken.

Vauxhall Tries Out New 4-Speed Planetary Gear-Set

LONDON, Jan. 28 (*by mail*)—A four-speed planetary gear-set is now being tried out by the Vauxhall Motor Co. after a series of experimental tests. It is being fitted to a number of 14 hp. Vauxhall cars, which will be run continuously on the road for several months in charge of selected drivers.

No details may be published concerning the design, though it may be said that, in a box larger than that needed for an ordinary four-speed gear train, the design eliminates pinions rotating at the very high speeds usual with planetary gearing, so reducing the noise on the indirect ratios. The latter are brought into use by self-adjusting contracting bands, but the control varies from the normal with planetary gears, in that there are no pedals beyond the usual clutch pedal, while the selection of the ratio to be used can be effected in advance of requirements by a small lever over the steering wheel; the gear is not changed until the clutch pedal is depressed.

Gas Products to Build

CLEVELAND, Feb. 8—The Gas Products Co. of Columbus, will build a $500,000 plant here for the manufacture of oxygen and acetylene gases. The factory will be in operation early in the summer.

"VOICE FROM SKY" AID TO AIRCRAFT

NEW YORK, Feb. 7—Successful demonstration of the "voice from the sky," a secret sound reproducing and amplifying device which makes possible direct vocal communication between aircraft and ground, is seen by the aircraft industry as of great value in commercial flying.

Major-General J. F. O'Ryan, president of the Colonial Aircraft Co., said planes of this company on the New York-Boston route will be able to communicate with towns over which they pass while in flight, transmitting any necessary messages.

Crash-Proof Tank Stands 300-ft. Fall from Plane

LONDON, Jan. 19 (*by mail*)—A test was made this week of a crash-proof gasoline tank for aircraft, designed by Major H. H. Evans, at a London aerodrome. A 10-gal. tank was taken up in an airplane and dropped from a height of 300 ft. without bursting. Subsequent inspection showed that while it was badly battered on one side and bulged at one end, it was still perfectly leak-proof.

The tank consists of two metal "skins" between which is a layer, ¼ in. thick, of a special non-inflammable and gasoline-proof composition. The weight of this 10 imperial gallon example works out at 3.8 lb. a gallon, which is heavy in comparison with the weight of the normal type of metal tank. But in the larger sizes there is not a great difference in this respect.

Judd & Leland Push Sales

ROCHESTER, Feb. 7.—Judd & Leland Mfg. Co. has opened an export office at 150 Nassau Street, New York, through which all foreign shipments of the company are now handled. The office is under the management of A. Luque. H. B. Earle, sales manager of the company, has left the plant at Clifton Springs for an extended tour of the middle west to look over part of the new territory which will be covered by the recently enlarged sales forces. A concerted drive is planned to market the company's automobile pumps and other products in every state in addition to expanding the large export trade.

Plan Newark Speedway

NEWARK, N. J., Feb. 7—Tex Rickard is reported to be negotiating with the City of Newark for erection of a one and one-quarter mile board racing track for automobile races at Port Newark, to cost $500,000.

The track is to be promoted for a group of wealthy sportsmen. A tentative lease of a site covering 120 acres has been submitted to the company's attorneys. If approved, work is to begin at once.

Electric Society Pushes Truck Sales

Will Centralize Efforts in Districts Where Conditions Favor Business

NEW YORK, Feb. 8—The Society for Electrical Development will continue its cooperative efforts toward developing the market for electric street trucks in 1927, following decision to this effect by manufacturers of these vehicles and battery and accessory manufacturers represented in the society. The program for 1927 will provide for concentrating the bulk of the sales effort in local territory where truck manufacturers are represented and where there is an opportunity to enlist the support of the local central station company.

In carrying through this effort through the society, the manufacturers have been assured of the active cooperation of the transportation committee of the commercial section of the National Electric Light Association. It is contemplated to hold the next meeting of the street truck group in Chicago at the time of the N. E. L. A. meeting of the commercial national section, March 9 to 11.

Companies participating in the market development program are: Commercial Truck Co., O. B. Electric Truck, Inc.; Walker Vehicle Co., Ward Motor Vehicle Co., Edison Storage Battery Co., Electric Storage Battery Co., Albert & J. M. Anderson Mfg. Co., Electric Products Co., General Electric Co., Sangamo Elec. Co., and Westinghouse Electric & Manufacturing Co.

Splitdorf Stockholders to Get New Stock Issue

NEWARK, N. J., Feb. 7—Sale of the additional 67,000 shares of no par common stock of the Splitdorf Bethlehem Electrical Co. will enable the company to pay off practically all of its indebtedness and will provide $2,000,000 net working capital, Walter Rautenstrauch, president, has announced. The new shares will increase the capital stock to 160,000 shares and will be offered to stockholders on a share for share basis at $15 a share.

In his letter to stockholders, Mr. Rautenstrauch said the company did a business of approximately $4,500,000 in 1926, and in spite of handicaps incident to a period of reorganization, realized a net profit after depreciation of $330,240 or $4.93 a share. At the stockholders' meeting all officers and directors were reelected.

Hupp Adds 41 Dealers

DETROIT, Feb. 7—Hupp Motor Car Corp. reports the signing of 39 new dealers in the United States and two in Canada during January.

Steel Backlogs Grow as Orders Increase

Competition for Business Continues Keen—See German Alloys in Exports

NEW YORK, Feb. 10—Every day automotive demand for steel products attains greater volume, but very few of the orders placed involve tonnages worthy of mention because of size. There is a steady influx of business for March shipment in sheets, hot and cold-rolled strip steel, cold-finished steel bars, bolts and nuts, and automotive alloy steels. Backlogs are accumulating slowly, but steady improvement is noted in this direction, especially in alloy steels.

Producers appear to be satisfied for the present if prices show no sign of slipping. Competition, however, continues keen and the scramble among mills for each and every order that will permit their reaching a point in their operations somewhat nearer full capacity than at present could hardly be more spirited. Conditions in the various markets are far from uniform.

Full-finished automobile sheets are steadier than any of the other sheet descriptions. While demand for both hot and cold-rolled strip steel is broadening, the market is ragged. On the other hand cold-finished steel bars hold firm, good-sized commitments from automotive parts makers being reported by leading finishers.

Reports that the merger of German automotive alloy steel mills will make an active bid for American business have attracted considerable attention in the trade. Even though American manufacturers might effectively overcome such foreign competition in steel for home consumption, the question is being asked whether automotive exporters would not take to the use of such steels in units for shipment abroad, as they would be able to have the duty paid on the steel refunded to them by way of a customs drawback.

Pig Iron—The market continues easy and a recent decline in the eastern Pennsylvania district of 50c per ton has added further to this condition.

Aluminum—Somewhat improved inquiry is noted from automotive consumers. Arrivals of foreign metal are relatively light. The market for secondary metal rules easy. London cables quote the market there at £105.

Copper—Quite a little copper passed into the hands of consumers when the price for the red metal dipped below 13 cents. One large producing and marketing interest is blamed for the violent breaks that have occurred, but it is known that this company sold less copper at low prices than most of its competitors. Brass makers report business light, with automotive orders not as plentiful as looked for.

Tin—A decline in February shipments from the Straits furnished the pretext for fresh advances.

Lead—Announcement by leading refiners that production would be curtailed by 15 per cent to cut down surplus and elevate the price level, comes at a time when storage battery makers are fairly well provided.

Zinc—Like in the lead market, efforts are being made to curtail production. The market is easy.

JUNE AND AUGUST LEAD PARTS SALE

DETROIT, Feb. 5 — Analysis of sales by National Automotive Parts Association members during 1926 showed June to be the peak month with 9.44 per cent of the total year's business, with August a close second with 9.39. January was the low month of the year with 6.66 per cent.

Net sales by association members were 17.77 per cent higher than in 1925, this mark being established despite the lowest price level the parts replacement field has known.

Percentage of sales for each month follows:

Jan.	6.66	July	9.15
Feb.	7.41	Aug.	9.39
March	8.47	Sept.	8.88
April	8.74	Oct.	8.50
May	8.93	Nov.	7.70
June	9.44	Dec.	6.73

Servel Increases Schedule, Personnel Changes Made

EVANSVILLE, IND., Feb. 7—Announcement of changes in executive personnel, and the launching about Feb. 15 of a 50 per cent increased production schedule, was made today by an official of the Servel Mfg. Co.

Fred Cummings, New York, has been appointed general controller and assistant treasurer, taking over the plant duties of H. T. Birdsall, assistant secretary, who severed connection with the industry Jan. 22. No successor to the assistant secretaryship has as yet been announced. I. R. Kappler, assistant manager of the service department, resigned Jan. 31.

The increased production schedule will largely concentrate on Chevrolet truck bodies, bringing the output to 200 bodies per day.

Takes Accurate Name

CLEVELAND, Feb. 7—Parts Mfg. Co. has changed its name to the Accurate Parts Mfg. Co. There will be no change in personnel, product or policies. Ira Saks, president, said the name change was made to tie up the firm name more closely with its line of products. Additional items will be announced during 1927, he said.

Cleveland Plants Add Men

CLEVELAND, Feb. 7—Seventeen automotive plants here added 803 men to their working forces during January raising employment in the industry 5.2 per cent over December, according to the Chamber of Commerce.

Rim Output Gains 392,989 in January

Total is Below Production Rate at Start of 1926—Trucks Increase

CLEVELAND, Feb. 7—While rim production in the United States during January increased 392,989 over the previous month it was still 491,463 rims below January, 1926, according to the monthly report of the Tire & Rim Association of America. The total for January, 1927, was 1,489,018 and for the same month, one year ago, 1,980,481. The month's production in principal sizes was as follows:

Clincher	Jan., 1927	Jan., 1926
30 x 3½	121,182	373,926
Balloon		
28 x 3½	491,031	792,343
28 x 4	144,309	198,336
29 x 4	235,163	186,713
30 x 4½	80,628	158,296
30 x 5	11,225	14,939
31 x 5	25,374	25,627
High Press		
30 x 3½	3,539	16,570
32 x 4	14,233	13,657
32 x 4½	29,133	45,927
Truck "20"		
30 x 5	135,958	46,804
Truck "24"		
34 x 5	6,314	5,567
36 x 6	1,543	7,968

Fuels and Engines Develop Together

BUFALLO, Feb. 5—"Gasoline has worked more rapidly in changing conditions of living than any other material discovered," said A. Ludlow Clayden, research engineer of the Sun Oil Co., in an illustrated talk before the Society of American Engineers here this week. "By 1930 we no longer shall be dependent upon the natural raw gasoline. Gasoline of the future will be far superior to the original natural fluid.

"The question is often asked, 'How are automobile manufacturers to increase compression until the distribution of suitable fuel is nation-wide?' While the refiner, in turn, asks, 'Why should we trouble to produce anti-knocking fuel until there is real need for it?' The answer, of course, is that the two developments must go together, and a point which often is lost sight of is that the anti-knock fuel is of quite distinct advantage in existing machines."

Sets Speed of 174.8 m.p.h.

LONDON, Feb. 4 (*by cable*)—Malcolm Campbell, driving the 500 hp. airplane-engined racer of his own design, established new records for the kilometer and mile on Pendine Sands this week. He drove at a speed of 174.883 m.p.h., setting a kilometer record of 12.791 seconds. The previous record speed was 170.624 m.p.h. set by Parry Thomas.

Citroen to Build Copenhagen Plant

Takes Site Near American Factories—Cologne Plant Soon to Start

PARIS, Jan. 26 (*by mail*)—The Andre Citroen Co. has acquired 200,000 sq. ft. of land in the suburbs of Copenhagen, between the Ford and the General Motors factories, on which an assembly plant will be erected. The architects and engineers are leaving Paris immediately in order to start work on the construction of this factory, which is intended to meet the requirements of all the Scandinavian countries.

Citroen will start production in two to three months in the plant at Cologne recently bought. It is expected that from 15 to 20 cars will be turned out daily and that the production can soon be increased. Just as in the Paris shops of the Citroen company, only one type of car, a four-seated 6/25 hp. will be constructed. Only German workingmen are to be employed at the Cologne plant. In a few weeks a company styled as "Deutsche Citroen Automobil Aktien-Gesellschaft" will be formed at Cologne with a full paid capital of 1,000,000 marks.

Renault Output Leads French Makers in 1926

WASHINGTON, Feb. 9—French motor vehicle production in 1926 increased approximately 200,000 units above 1925, according to reports received here by the U. S. Department of Commerce. Registration of cars and trucks increased about 150,000 units, to a total at the end of 1926 of 875,000. Estimates of individual production of leading manufacturers show that Renault led with 60,000 cars in 1926; Citroen was second with 45,000, and Peugeot third with 28,000.

France Votes Road Fund

WASHINGTON, Feb. 11—The French Parliament, in accordance with the 1927 budget, has passed the largest government appropriations ever made by that country for road and bridge construction, amounting to 2,000,000,000 francs. The program of construction is designed to restore France's highways to their pre-war rank, the policy adopted calling for concentration upon a few entire routes at a time. Work will begin upon a schedule of 6500 miles of main roads.

Favor Flat Rate Payments

CHICAGO, Feb 5—Value of the commission plan of compensation was outlined by F. A. Oberheu, sales manager of United Motors Service, Inc., at the Automotive Electric Association convention held here this week. An expression by members showed a large majority now paying employees on flat rate arrangements. H. R. Cobleigh, secretary of the service committee of the National Automobile Chamber of Commerce, spoke on the need for flat rate payments. Talks were given also on accounting, merchandising, the future of specialized service, service to the fleet owner, working with the other fellow and on securing and holding owner business.

Japan to Encourage Assembly Branches

WASHINGTON, Feb. 11—Development of the domestic automobile manufacturing industries of Japan is being investigated by committees in Tokyo, Osaka and Nagoya, under instructions from the national government, according to advices received from Tokyo by the U. S. Department of Commerce.

The committees are studying proposals to stimulate the industry by increasing import duties, adjustment of taxes, creation of a semi-official automobile association to conduct research work, expropriation of land for automobile manufacturers, abolishing of unnecessary restrictions and increasing of the military automobile subsidy law.

M.& A.M.A. Group Seeks Way to Small Town Sales

CHICAGO, Feb. 8—Thirty-five members of the Motor & Accessory Manufacturers Association, in a group meeting, discussed means of improving accessory distribution in towns of 5000 population or under. One suggestion was that an adequate discount be given to garages, motor car dealers, repair shops, etc., in these places.

All companies were pleased with the recent survey on accessory distribution made by the M. & A. M. A. This survey of 36 different manufacturers showed that all have wholesale representation in 582 cities. They are selling through automotive equipment wholesalers in 539 cities and through specialty wholesalers in 259 different cities.

Aircraft Export Gain 1/3

WASHINGTON, Feb. 8—The value of United States exports of aircraft engines, aircraft and parts during 1926 increased almost one-third over those of 1925, the U. S. Department of Commerce announced this week. The total value last year was $1,038,929, as against $783,659 in 1925. The exports last year included 85 planes, valued at $304,842; 855 engines, valued at $583,758, and parts valued at $150,329.

Paige Exports Gain 30%

DETROIT, Feb. 7—Paige-Detroit Motor Car Co. reports increases in export business in 1926 of 30 per cent, about 80 per cent of the exported cars being closed models. These totals do not include Canadian figures which gained 144 per cent in 1926. The greatest European gains were in France and Sweden.

Traffic Heads Study Automotive Freights

Will Disclose Position Accorded by Railroads and Relation to Other Freight

DETROIT, Feb. 5—The most intensive freight research ever undertaken by the automobile industry was launched at the meeting here of traffic managers of the National Automobile Chamber of Commerce. As authorized by the chamber, the traffic department and traffic managers' committee are to study rate elements and traffic characteristics of automobiles and parts, the position accorded them by the railroads in freight classifications and tariffs, and the relation of shipments of this character with other commodities.

Considerable progress has already been made in similar research in connection with iron and steel articles shipped and received by members of the chamber.

This study is for the guidance of the traffic department and members in connection with an investigation now in progress by the Interstate Commerce Commission which will determine the freight rates on iron and steel articles between points east of the Mississippi River and particularly the relation of these rates between the several manufacturing points and consuming points.

South American Study Voted by N.A.C.C. Board

CHICAGO, Feb. 5—Directors of the National Automobile Chamber of Commerce at their meeting here this week voted to have George F. Bauer, secretary of the foreign trade committee of the Chamber make a study of conditions in South America. It was also decided to have a committee headed by H. J. Cupper of the General Motors Corporation, to seek means of improving the accuracy of registration figures. By obtaining more accurate statistics the industry would have a very good guide on the sales trend which would aid in estimating production schedules.

The N. A. C. C. also went on record strongly favoring certificate of title laws in all states with a view of lowering insurance costs and making it more difficult to dispose of stolen goods.

G. M. Extends Insurance

NEW YORK, Feb. 7—The large number of employees already insured under the General Motors group insurance program has been augmented by the inclusion of all eligible employees of the Yellow Truck & Coach Mfg. Co. When the original program was made effective in December, 1926, the policy was, in point of number of lives covered, the largest in insurance history. The total coverage was then estimated at $100,000,000. It is now more than $130,000,000.

Hare & Chase Board to be Cut to Five

Branches of Company Not Involved in Present Difficulties, Says Director

PHILADELPHIA, Feb. 10—The board of directors of Hare & Chase, Inc., will be reduced to five members by the new controlling interest, the Royal Indemnity Co., at a meeting this week. The new board will consist of three directors representing the Royal Indemnity Co. and two will be chosen from the present board of 15. The resignation of A. G. Hare, president, has been accepted.

A protective committee of five was authorized at a meeting of preferred stockholders and P. H. Clark, a director, was appointed to the committee with authority to select four other members.

Difficulties of Hare & Chase were disclosed to stockholders as arising from the rediscounting of a line of taxicab paper taken by the General Finance Co. of Indianapolis, which is now in receivership. Hare & Chase is liable for $4,600,000 of this paper which has been rediscounted with banks.

Mr. Clark told stockholders that it is the desire of those interested in the present situation confronting Hare & Chase, Inc., to continue the business. To aid in the reconstruction of the company, he said, a number of the larger banks in Philadelphia and New York have agreed to hold Hare & Chase paper through the year.

The company made a net profit of approximately $1,000,000 in 1926, Mr. Clark said, of which sum $750,000 was realized from business other than that involved in the General Finance Co. transaction. The 65 branches of the company are to an extent independent of the home office, Mr. Clark said.

Lansing Executives Back New Aircraft Corporation

LANSING, Feb. 7—The Driggs Aircraft Corp., incorporated for $100,000, has been organized here to manufacture airplanes. Production will start about March 1.

Harry F. Harper, president and general manager of Motor Wheel Corp., has been named head of the new corporation. Other officers are Ivan H. Driggs, vice-president and general manager; E. C. Shields, secretary, and Hugo Lundberg, treasurer. Other Lansing men who will compose the directorate are R. E. Olds, Donald Bates, Ray Potter, J. T. Hopkins, and H. T. Thomas.

Ford Gets Scrap Extension

WASHINGTON, Feb. 8—Extension of one year has been granted Henry Ford, in which to complete scrapping the 199 surplus steel cargo ships which he purchased from the government in 1925, the Shipping Board has announced. Under his contract the automobile manufacturer was to completely scrap the ships by Feb. 4, this year—purchase to be used by the manufacturer as automobile materials. The extension of time was necessary, Mr. Ford told the board, because of delay in securing the scrapping equipment.

Stutz Design Suit Dismissed by Court

INDIANAPOLIS, Feb. 7—Suit filed in Federal Court here to enjoin Stutz Motor Car Co. of America, Inc., from manufacturing and selling the present design of Stutz chassis and motor car, was dismissed by Judge Baltzell for want of equity. The suit was filed by James Scripps Booth who charged priority to the design and demanded an accounting of $3,000,000 in profits.

Mr. Booth alleged in his suit that the Stutz design was almost identical with the car he had designed. The court decided that this was not borne out by the testimony.

Stutz Sales 50 to 55 Daily

INDIANAPOLIS, Feb. 8—Orders for Stutz cars are running 50 to 55 daily according to E. S. Gorrell, vice-president in charge of sales of Stutz Motor Car Co. of America, Inc. Production is at a rate 60 per cent greater than at the same time last year.

Briggs Executives Buy Control of Le Baron, Inc.

NEW YORK, Feb. 8—Control of Le Baron, Inc., has been acquired by W. O. Briggs and John H. French of Briggs Mfg. Co., Detroit. Mr. French has been elected president. C. W. Seward and R. S. Roberts will remain as directors. The company will continue the building of custom bodies, with designing studios and sales offices in New York under direction of Mr. Roberts, and manufacturing at the Bridgeport plant under direction of Mr. Seward as general manager. J. H. Hinman will be works manager and R. B. Birge chief engineer and superintendent. The volume of business on hand Jan. 1 was almost twice as large as at the start of any previous year.

To Add Sixth Factory

MINNEAPOLIS, Feb. 7—National Lead Battery Co., St. Paul, will erect a sixth factory in Newark, N. J. This firm started in 1910 and is now doing a $5,500,000 business a year. Other factories are in St. Paul, Chicago, Kansas City, Los Angeles and Cincinnati. The sixth will cost $250,000 equipped. In addition to 11 factory branches three are to be opened in 1927 in St. Louis, Boston and Cincinnati. The new plant will make 2000 batteries a day. Present capacity of all factories is 4000 batteries, producing a total of 640,000 in 1926. The goal for 1927 is 750,000.

Financial Notes

General Tire & Rubber Co. in its balance sheet of Nov. 30, 1926, shows total current assets of 7,212,948, which compares with $5,800,864 the year previous. Current liabilities totaled $2,112,475 as against $945,-139 in the previous year. Cash increased to $566,666 from $438,099; receivables decreased to $3,670,622 from $3,763,007, and inventory increased to $2,971,112 from $1,597,612. Net working capital increased to $5,100,473 from $4,855,725.

Seiberling Rubber Co. shows net sales of $14,920,294 for the year ended Dec. 31, 1926, against $10,569,523 in the year previous. Net after preferred dividends in 1926 was $359,117 against $890,988 in 1925. The balance sheet showed current assets totaling $3,828,103 and current liabilities of $966,923. Surplus increased to $1,891,242 from $1,532,126.

Caterpillar Tractor Co. and subsidiaries report net sales of $20,699,102 in 1926, against $19,114,003 in 1925. Profit before interest and Federal taxes was $5,003,094, compared with $4,457,559 in 1925.

Rickenbacker Statement Shows $6,365,324 Assets

DETROIT, Feb. 7—According to a letter sent to creditors by the Security Trust Co. and B. F. Everitt, receivers for the Rickenbacker Motor Co., the concern had assets of $6,365,324 and liabilities of $1,945,269 as listed in the balance sheet of Oct. 31, 1926.

The letter states that operations have been continued to some extent by the receivers to take care of urgent orders for automobiles, and to provide service as far as possible and to preserve service connections.

Officers of the company are striving to effect a reorganization, it is stated, but to date no plan has been sufficiently developed to warrant making any announcement.

C.I.T. Shows 1926 Increase

NEW YORK, Feb. 7—Net income of Commercial Investment Trust Corp. for the year ended Dec. 31, 1926, was $3,530,171 as against $2,976,126 in 1925. Current assets as of Dec. 31, 1926, totaled $97,605,969 as against $81,177,-082 at the close of 1925. Cash totaled $13,356,576 as against $19,690,753 and receivables $83,270,394 as against $61,-253,660. Repossessed cars included among current assets as of Dec. 31, 1926, totaled $378,914 in value. No repossesed cars were shown in the 1925 report.

Soviets Buy Fordsons

DETROIT, Feb. 9—Ford Motor Co. reports orders from the Soviet Government for 3500 tractors which are now being filled. Shipments are being made to Odessa and Novorssisk from which ports the tractors will be sent inland by rail.

Cologne to Present 1st Post-War Show

BERLIN, Jan. 26 (*by mail*)—Invitations are now being sent around by the promotors of the Cologne show, May 20 to 31, to all manufacturers of motor trucks, lorries, delivery cars, tractors and all other specialized automotive machinery including road cleaning machines and fire engines. It is being arranged by the Cologne Exhibition Bureau under the auspices of the German Automobile Makers' Association and the German Automobile Dealers' Association and promises to be a success, for Cologne is situated in some respects more favorably than Berlin, in which only passenger cars are to be exhibited this fall. Cologne is one of the centres of the huge industrial district around the Rhine and Ruhr. This is the first international show to be held in Germany after the war and it is being looked to with great expectations by all concerned.

Barcelona Show Draws 19 American Exhibitors

PARIS, Jan. 27 (*by mail*)—The Barcelona show, to be held from April 27 to May 8, has united 422 exhibitors, with stands occupying an area of 85,000 sq. ft. There will be 230 passenger car stands, 65 in the truck section and 127 in the accessory division. France heads the list with 23 passenger car exhibitors, followed by the United States with 19. Italy has seven makes, Spain four, Germany three, Belgium two and Austria one.

The American cars to be exhibited are Buick, Ruby, Packard, Nash, Willys-Knight, Overland, Stutz, Ford, Studebaker, Hudson, Essex, Dodge Brothers, Graham Brothers, Lincoln, Elcar, Chrysler, Moon, Diana, Chevrolet.

National-Harris Formed

NEWARK, N. J., Feb. 7—The consolidation by purchase has been announced of Harris Alloys, Inc., the National Alloyed Metals Co. and the Murray-Harris Wire Co., the business of which companies, dating from Jan. 27, will be conducted under the name of the National-Harris Wire Co. which assumes all obligations of these companies. The address of the company is 606 North Third St., Newark.

Coming Feature Issue of Chilton Class Journal Publication

Feb. 19—Automotive Industries —9th Annual Statistical Issue.

British Trade Commission Prepares for Export Trip

LONDON, Jan. 26 (*by mail*)—A trade commission of inquiry is shortly to proceed to certain Empire countries with a view to developing the British export trade. Lieut.-Col. Alfred Hacking, secretary of the Society of Motor Manufacturers and Traders, will most probably be one of the members.

Bertram T. Rumble, overseas sales director of Tilling-Stevens Motors, Ltd., maker of gas-electrics, has left England for a long business trip.

W. E. Rootes, managing director of Rootes, Ltd., leading British automotive exporter, is sailing for Australia.

British cars showing at the Egyptian motor exhibition, Cairo, on Feb. 16 will include Rolls-Royce, Hillman, Clyno, Austin and Bean.

Fixes Horn Tariff Basis

WASHINGTON, Feb. 10—Automobile horns, imported under paragraphs 399, act of 1922, and assessed at 40 per cent ad valorem, should be taxed at 25 per cent their value, under paragraph 369, as parts of automobiles, according to a United States Customs decision, just reported to the Department of Justice.

Under another decision also reported to the department this week, the tariff on motor truck chains is lowered from 40 per cent ad valorem to a rate of 1⅛ cents per pound, being classified as "manufactures of metal not specially provided for."

To Address Rubber Board

NEW YORK, Feb. 7—A. W. Loasby, president of the Equitable Trust Co., and J. Joyce Broderick, commercial counselor to the British Embassy at Washington, will speak at the first annual dinner of the New York Rubber Exchange on Feb. 15 at the Hotel Roosevelt. F. R. Henderson, president of the exchange, will be toastmaster.

Monte Carlo Race Boosts Small Cars

PARIS, Jan. 28 (*by mail*)—Small cars upset all estimates and calculations by winning first two places in the Monte Carlo international rally touring competition. An Amilcar, of 67 cu. in. piston displacement, fitted with a Cozette supercharger, carried five passengers from Koenigsberg, eastern Prussia, to Monte Carlo, a distance of 1,642 miles, at an average speed of 22 m.p.h., all stops included, and thus won first place with 279.983 points. A Celtic Bignan, having the same size of engine, carried four passengers from Koenigsberg and won second prize with 272.619 points.

The 54 competitors in this competition started from distant points of Europe varying from 600 to 2000 miles, to reach Monte Carlo at an average speed approaching as closely as possible 22 m.p.h., no allowance being made for stops of any kind. A reliability test over a difficult mountain course near Monte Carlo was held at the end. To put the various types of cars on an equality, the points per passenger increased in inverse ratio to the piston displacement, for it was believed that the smallest cars would not carry more than three persons, while the bigger machines would be occupied by the maximum number of five.

Big Cars Handicapped

When the 67 cu. in. cars proved they could cover long distances in mid-winter with five persons aboard, cars with bigger engines had no possible chance of winning first place. While the results are quite contrary to what was expected by the organizers, they have tended to enhance the reputation of the small European type of light car, for this competition is one which strikes the imagination of the buying public.

A.A.A. Approves Tracks

CHICAGO, Feb. 5—At a meeting of the Contest Board of the American Automobile Association held in Chicago this week, a number of dirt tracks were officially recognized and assigned dates for 1927. The tracks to which dates were assigned are: the Hawthorne track, Chicago; the Robey, Ind., track; the Crown Point track and the Winchester, Ind., track. Others probably will be given definite dates later.

Calendar of Coming Events

SHOWS

Cairo .....Feb. 15-March 15
First International Motor Show.

Cologne .....May 20-31
International Commercial Transport Exhibition.

Copenhagen .....Feb. 18-27
Danish Automobile Exposition.

Geneva .....March 4-13
Palais des Expositions.

Los Angeles .....Feb. 12-19
Annual Salon, Hotel Biltmore.

CONVENTIONS

American Welding Society, Engineering Societies Bldg., New York City .....April 27-29

Automotive Equipment Association Summer Convention, Multnomah Hotel, Portland, Ore.....June 27-July 2

National Battery Manufacturers Association, Benjamin Franklin Hotel, Philadelphia .....March 10-11

National Foreign Trade Council, Detroit .....May 25-27

National Safety Council, Mid-West Safety Congress, Hotel La Salle, Chicago .....Feb. 21

S. A. E.

Detroit, Feb. 17—Electro-Deposition of Rubber—Dr. S. E. Sheppard and J. W. Schade.

French Lick Springs, Ind., May 25-28—Summer Meeting.

Metropolitan, Feb. 17—Buses—R. N. Graham.

RACES

Abilene, Texas .....July 4
Altoona, Pa. .....June 11
Atlantic City .....April 30
Charlotte, N. C. .....May 9
Fresno, Cal. .....April 21
Indianapolis .....May 30
Los Angeles .....Feb. 22
Los Angeles .....April 10
Salem, N. H. .....June 25